IRON TRADE REVIEW
Registered U. S. Patent Office
The Authority of Industry — National and International
Vol. LXXV — Cleveland, October 30, 1924 — No. 18

Market Confidence Is Stronger

Buyers and Sellers Demonstrate Greater Faith in Election Outcome and in Future Business Conditions—Steel Prices Stiffen and Advances Are Intimated—Buying of Railroad and Building Material Keeps Active

STRONGER confidence in future conditions appeared this week in various quarters of the iron and steel market and the expectations of renewed improvement in demand and production are more positive. Price rearrangements are less disturbing and clearly there is more disposition on the part of both buyers and sellers to discount a favorable result in the approaching election. As has been the case for several weeks, a good many undertakings involving considerable tonnage, are being held in abeyance temporarily but the present undertone of the market suggests the general belief that most of these will be closed in the near future. Current ordering is well sustained with steel production unchanged at 60 to 65 per cent average.

Mills in Chicago territory are finding it less easy to satisfy all demands for early shipment. On some bar sizes they are five to six weeks filled. This situation tends to give mills to the East an opportunity to compete for tonnage in the Chicago market from which they have been virtually barred by the local price bases. This has enabled one independent maker of tin plate to quote a price at Chicago $1 per ton above that of the nearby Steel corporation plants. Alloy steels have been put on a Chicago base $2 per ton above Pittsburgh.

Prices Are Firmer

The attitude of steelmakers toward prices unmistakably is one of greater faith in the outlook. A number of the larger mills have stiffened in their quotations on structural shapes and steel bars and this week have refused to shade a basis of 2.00c Pittsburgh whereas $2 concessions recently have been given. Considerable tonnage has been taken at the 2.00c price and a report is current at Pittsburgh that an advance of $2 a ton in the near future would not be surprising. Such an advance has been quoted on automobile spring steel for first quarter of next year. Softness in sheet prices is less pronounced. In the Chicago district, there is increased talk of an early advance on plates, shapes and bars and possibly on sheets. An adjustment in electric conduit pipe by a Mahoning valley independent has lowered this product $6 per ton.

IRON TRADE REVIEW composite of 14 leading iron and steel products reflects the greater stabilization of the market. The index this week is $38.61 compared with $38.65 both last week and two weeks ago.

Place 1925 Material

Contracting for building steel for spring delivery is beginning at Chicago and points to the continued spread and strength of the situation in this field. Two 15,000-ton projects there are nearing the contracting stage. New York has 20,000 tons of new work up this week. The week's awards in structural steel are the heaviest in weeks, aggregating 33,242 tons. A 9000-ton section of subways at Philadelphia is included. A number of railroad bridge undertakings are current, among which is 3000 tons for the Alaska Northern railroad.

A large pipe line proposal at San Francisco to be passed on by the voters next week will require 38,000 tons of 60 and 72-inch pipe.

Railroad tonnage still is the backbone of the market. The Erie railroad in the week closed for 32,000 tons of rails and the St. Paul has placed a comparable tonnage. The Chesapeake & Ohio and the Missouri Pacific rail orders are scheduled for closing this week. Orders for track fastenings with Chicago mills are heavy, totaling 15,000 to 20,000 tons this week. The Norfolk & Western is in the market for 3000, the Burlington has inquired for 1000 and the Northern Pacific for 800 cars. The Baltimore & Ohio is in the market for 15,000 tons of steel for car repairs.

More consumers of pig iron are willing to commit themselves on tonnage through the first quarter of next year and bookings of this character have considerably increased. Iron still may be bought for first quarter without advance though Buffalo furnaces have been booking some tonnage at a higher figure and some other makers are predicting higher prices in the belief that iron ore may be raised. Cleveland reports sales of 20,000 tons, chiefly for next year. Basic shows some revival at Pittsburgh with a sale at $18.50, valley.

Big Orders Awaited

Expectations of heavy buying of tin plate by food packers and oil interests are beginning to be borne out by the appearance of inquiries for export, totaling 500,000 boxes. These include 300,000 boxes for the Standard Oil Co. of New Jersey and a large amount for other Standard Oil subsidiaries.

Business Trend and Chart Section Page 1145

The Reader's Page

Contents, Oct. 30, 1924

ENGINEERING ARTICLES

Scrap Trade Becomes Industry—By W. Vernon Phillips.....1158

Making Brick from Slag Concrete—By C. E. Ireland.....1159

Determines Composition of Slag—By Richard S. McCaffery.....1161

Outlines Blast Furnace Practice—By R. H. Ledbetter.....1163

Joins Ranks of Strip Producers—By John D. Knox.....1165

Large Uses of Steel in Small Ways—Mechanical Pencils.....1172

Making Tin Plate in Jungle Land—By Frank L. Estep.....1173

MARKET AND GENERAL NEWS

General Market Review.....1129
Domestic Market Reports.....1131-1144
Price Tables.....1132, 1133, 1188, 1192, 1194
British Market Is Stronger.....1144
Business Trend Charts.....1145-1148
Editorials.....1150, 1151
Institute Emphasizes Confidence.....1152
Steel Industry on New Basis—By E. H. Gary.1154
Sketches of Institute Speakers.....1156-1157
Yearbook Summarizes Industry.....1178
Delivered Price System in Doubt.....1179
Steel Imports and Exports Steady.....1180

Men of Industry.....1177
Obituary.....1181
Here and There in Industry.....1183
Machinery Market Report.....1184
Crane Awards and Inquiries.....1185
Business Changes.....1186
Construction and Enterprise.....1186, 1187, 1190

Commerce Yearbook Quotes I.T.R.

COMMERCE Yearbook, published by the department of commerce, represents a notable achievement by the department in its efforts to render the greatest service of which it is capable, to the American people. The Yearbook brings all the important facts and statistics relating to the commerce of the United States, and the foreign countries

Engineers who built tin plate mill in India. Page 1173.

with which business is transacted, into one volume, and so presents the most authentic information obtainable on the various subjects, for the benefit of all classes of readers. In the current issue, of a total 700 pages, 20 are devoted to the iron and steel industry. Statistics originally compiled by Iron Trade Review relating to world production, average prices, furnace activity, distribution of steel into finished products and similar information were selected by the department for the section. As in many other government publications, the stamp of confidence is placed on Iron Trade Review's reports.

Cross Sections of Industry

"Tanks for dip painting or enameling are used by a great many IRON TRADE REVIEW readers."—*From IRON TRADE REVIEW'S Survey, "Tanks".*

Pig Iron Buyers Showing Confidence—Inquiries Large, Sales Good in Some Districts—Market Set for Expansion

PITTSBURGH, Oct. 28.—Pre-election hesitancy is deterring the pig iron market. Some are confident about the future and the election outcome and are anxious believing advantages are imminent. Some makers are disinclined to obligate their output at present prices. They believe higher levels will prevail next month on the strength of larger demand. Several valley producers confidently predict higher selling prices for the first quarter, expecting 1925 ore prices will be at least 50 cents higher. Some activity recently was noted in basic iron. The Allegheny Steel Co. was taking figures on 5000 tons for the first quarter. The Follansbee Bros. Co., which wanted 2000 for November shipment closed at $19 nearby furnace. Mahoning valley makers are not disposed to meet $18.50, valley, an equivalent figure recently paid by another sheetmaker near here on considerably in excess of 2000 tons, partly for November and December and partly for first quarter, next year's requirements to be shipped before Jan. 1. This interest is not through purchasing. Single carload sales of bessemer occasionally are recorded at $20, valley. The Bethlehem Steel Co. is quoting $21, Johnstown, on prompt and future iron. No inquiries are out now. Some appearing last week, specifying first quarter delivery, have disappeared, after receiving minimum quotations of $20.50, valley for extended deliveries. Occasional sales of small lots of foundry iron are noted at $19 to $19.50, valley base, for No. 2. The Bethlehem company claims to have sold numerous small lots at $20, Johnstown. Valley producers are claiming inability to obtain higher than $19.50. Several small inquiries are appearing from consumers of foundry iron for first quarter delivery, together with three or four speculative inquiries from middle interests wanting 5000 to 10,000 tons of foundry iron below $19. So far the lowest quotation named for first quarter delivery on No. 2 plain is $19.75, valley. A radiator manufacturer, Johnstown, wants 500 tons of No. 2 for prompt shipment. The Pennsylvania railroad's Altoona works is inquiring for 500 to 1000 tons of No. 1 foundry iron, or the same quantity of car-wheel basic iron for first quarter delivery. Valley producers of low phosphorus copper-free iron are booking orders for regular customers on 200 to 1000 tons at a time, some for the remainder of the year, some for the first quarter delivery at $28 to $29, valley, depending upon tonnage involved, analysis and delivery.

Eastern Market Quiet

New York, Oct. 28.—Sales of pig iron in this territory during the past week aggregated around 6000 tons, which is the smallest week's business in sometime. Little inquiry of importance is pending. Recently, $19.50 base furnace was done on eastern Pennsylvania foundry iron in large tonnages. Eastern producers now are holding for $20.50 base furnace and sales have been made at this figure during the past week. Despite the fact that a good many merchant producers are comfortably booked for the rest of this year there is a feeling in some quarters that the market is weak, and that lower prices might develop on attractive orders. Foreign iron continues a factor in the market. Indian and Dutch foundry iron continue to be sold regularly. Some French foundry iron recently has been sold and German iron also is being offered, but the price so far has been too high to induce any business. Louis Sacks Iron Foundry, Newark, N. J., placed around 600 tons of foundry iron for the first quarter of next year, the business being distributed among four producers. The prices done were substantially the same as asked for nearby shipment. As a rule, the producers are averse to selling for first quarter, excepting at a premium. Indications are that the melt at foundries in this territory is increasing.

Sales Are Large at Buffalo

Buffalo, Oct. 28.—There has been heavy covering of pig iron inquiry. Sales last week are estimated to have been about 30,000 tons, although new inquiry during the same period was between 15,000 and 20,000 tons. Sales were made up of a large number of small and medium size lots. This also is true of new inquiry. Buffalo makers have been asked for prices on first quarter iron but are inclined to take plenty of time before establishing a 1925 schedule. The sellers who hold for $20 base say this price is being obtained without great difficulty, together with full differentials in most instances. On this base Buffalo sellers are quoting $20.50 on No. 2X (2.25 to 2.75 silicon) and $21.50 on No. 1X. It is reported the $19.50 base price has been quoted by one Buffalo merchant within the past 10 days although the tendency toward the higher price seems pronounced. Twelve district furnaces are operating and 10 are out of blast.

Sales Speed Up

Cleveland, Oct. 28.—Pig iron sales have shown signs of speeding up ahead of the election returns. Certain buyers, with more confidence than fear, have made the week a fairly active one for some of the sellers whose headquarters are located here. The orders they placed total about 20,000 tons, most of the iron being for the first quarter. Inquiry has developed proportions unexpected at this time, and while some of it represents the effort of buyers to obtain protection on present prices until after election, much of it is being closed. One maker that has been refusing to accept orders for the first quarter found pressure from its customers too strong, and last week opened its books, with numerous contracts totaling nearly 10,000 tons, all for the first quarter, and at prices now prevailing. A leading merchant interest took 8000 tons in the week, fully half of which is for the first quarter. A lake furnace that has been leading in sales for next year has covered most of its regular customers' requirements, and its week's sales for the first quarter dropped to around 2000 tons. A fourth interest, with furnaces in Cleveland, has been taking tonnage during recent weeks and has a good backlog for the first quarter. All makers now are in the market for that delivery, and offering to do business at present prices. Orders principally are from gray iron, jobbing foundries; business in malleable is not so pronounced, while there is less activity in basic. The inquiries pending at the opening of this week before a steelworks interest approaches 10,000 tons; a lake furnace reports having inquiries for 7000 tons. One inquiry is for 1000 tons of high manganese iron for an eastern user. An inquiry from a nearby user for foundry iron may develop into an order for 15,000 tons. Cleveland furnaces are obtaining $20.50, furnace, for delivery in the 50-cent switching area. Valley competition at $19 to $19.50 is being encountered

outside. A lake furnace holds to $20. Following the sale of a tonnage of basic in the Pittsburgh district last week at a price report as $18.50, valley, some users have been seeking a similar price with a maker with headquarters here. A sale of 2000 tons was closed finally at $19, western Pennsylvania furnace.

Pennsylvania Iron Scarce

Boston, Oct. 28.—Scattered sales of Buffalo iron continue in New England at prices close to $19 furnace base, or $23.91 delivered. Pennsylvania iron, however, is exceedingly scarce with only two furnaces in the eastern district active in this market. The two furnaces are quoting $20, base, and it is understood that differentials are being shaded on round tonnages. No. 2X iron (2.25 to 2.75 silicon) has been sold during the past week at $23.65 delivered, but to offset this some eastern Pennsylvania furnaces have made sales fully $2 above this level to consumers desiring a special brand of iron. A Massachusetts consumer bought 300 tons of No. 2X Buffalo iron some days ago at $19, furnace, or $23.91 delivered, and there are rumors of sales even lower than this. One or two sales of high manganese Virginia iron in New England during the past week are of interest chiefly because Virginia iron has been conspicuously absent from this market during the entire year.

Southern Ohio Market Quiet

Cincinnati, Oct. 28.—Demand for northern malleable and foundry iron as well as southern foundry is extremely light. The northern quotation continues $20, Ironton, base but is untested. Foundry business is spotty. Some plants are operating nearly full, while others are barely going. Each week sees stocks go lower, but no attempt is made at replenishment. Inquiry involves approximately 5000 tons of foundry and malleable iron for first quarter. The Muncie Malleable Co. Muncie, Ind. wants 1500 tons of malleable for first quarter, while the American Seeding Machine Co. Springfield, O., and the Muncie Foundry & Machine Co. Muncie, Ind., each ask 400 tons of northern foundry. Sales involve relatively small tonnages. The Monitor Furnace Co., Cincinnati took 100 tons of northern and 300 tons of southern, while the Peerless Foundry Co., Cincinnati bought 200 tons of northern. A sale of 300 tons of Detroit iron to the Peerless Mfg. Co., Louisville, Ky., also is noted.

The market on southern iron ranges from $17.50 to $18, Birmingham base. At least two furnace interests will entertain first quarter tonnages at $17.50 furnace. Carlot buying characterizes the demand for silvery iron and recent sales have been at $1 a ton under the schedule.

Moderate Buying at Chicago

Chicago, Oct. 28.—Fair buying of northern iron continues, strengthening the conviction of some sellers that good business will develop after election if results are favorable. A Beloit, Wis., foundry placed 1200 tons of foundry iron and 50 tons of silveries. A Chicago melter placed 1000 tons of foundry iron, and a Wisconsin melter 1000 tons of malleable. A Kenosha automobile interest is inquiring for 600 tons of silveries for the first half. An Indiana user is seeking 1500 tons of malleable for first quarter. A Milwaukee melter wants 400 tons of foundry iron for first quarter. Inquiry from Wisconsin sources is an outstanding feature. The last quarter price on No. 2 foundry and malleable is $20.50, furnace. Some first quarter iron has been sold at this level to meet competition, but the tendency toward $21 is more marked, and the most recent business is at this level. Producers are less anxious to sell ahead, foreseeing improved conditions. Charcoal sales are light. The price still is $26, furnace. It is claimed silvery makers are holding to their schedule. Southern sales are light. Occasional lots of barge iron are meeting northern competition south of Chicago.

St. Louis Market Firmer

St. Louis, Oct. 27.—A slightly firmer and more optimistic feeling pervades the pig iron market. While buying still is along conservative lines, many of the larger users are beginning to display more interest in future requirements, and a number of tentative inquiries have come out, involving foundry and basic grades. The chief manifestation of the firmer trend is the fact that sellers are not so ready to accept any offer made. Since the first of October there has been a gradual upward trend in activities at mills, foundries and ma-

(*Concluded on Page* 1137)

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Oct. 29, 1924	Sept., 1924	July, 1924	Oct., 1923
PIG IRON				
Bessemer valley del., Pitts....	$21.76	21.76	21.66	27.26
Basic, valley	19.00	19.00	19.00	23.75
Basic, eastern del., eastern Pa.	20.00	20.00	20.50	24.00
*No. 2 foundry, del. Pitts.....	21.26	21.26	20.76	25.16
No. 2 foundry, Chicago	20.50	20.50	19.80	25.60
*Southern No. 2, Birmingham..	17.50	17.65	18.20	20.20
*Southern Ohio, No. 2, Ironton	20.00	20.00	19.40	23.90
**No. 2X, Virginia furnace....	24.50	24.50	24.50	25.00
**No. 2X, eastern, del. Phila....	21.76	21.26	21.76	24.51
Malleable, valley	19.50	19.50	19.00	23.25
Malleable, Chicago	20.50	20.50	19.80	25.60
Lake Superior charcoal, Chicago	29.04	29.04	29.04	30.05
Gray forge, val., del. Pittsburgh	20.76	20.76	20.26	24.51
Ferromanganese, del., Pitts.....	104.79	97.79	110.79	112.79
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh	37.00	37.50	39.20	42.50
Sheet bars, open-hearth, Pitts....	37.00	37.50	39.20	42.50
Billets, bessemer, Pittsburgh	36.00	37.10	38.00	41.50
Billets, open-hearth, Pittsburgh	36.00	37.10	38.00	41.50
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.05	2.15	2.40
Steel bars, Chicago	2.00	2.05	2.20	2.50
Steel bars, Philadelphia.....	2.32	2.37	2.47	2.72
Iron bars, Philadelphia	2.32	2.32	2.42	2.62
Iron bars, Chicago mill	2.10	2.15	2.20	2.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

	Oct. 29, 1924	Sept., 1924	July, 1924	Oct., 1923
FINISHED MATERIAL (Continued)				
Beams, Pittsburgh	2.00	2.00	2.15	2.50
Beams, Philadelphia	2.07	2.22	2.37	2.72
Beams, Chicago	2.00	2.10	2.25	2.60
Tank plates, Pittsburgh	1.80	1.95	2.10	2.50
Tank plates, Philadelphia	1.87	1.97	2.17	2.72
Tank plates, Chicago	2.00	2.10	2.25	2.60
Sheets, blk., No. 28 Pittsburgh	3.40	3.45	3.60	3.75
Sheets, blue anl., No. 10, Pitts.	2.60	2.70	2.75	3.00
Sheets, galv., No. 28, Pittsburgh	4.60	4.60	4.70	5.00
Sheets, black, No. 28, Chicago ..	3.65	3.75	4.00	4.10
Sheets, blue anl. No. 10 Chicago	2.85	2.95	5.25	3.35
Sheets, galv. No. 28, Chicago ..	4.75	4.85	5.15	5.35
Wire nails, Pittsburgh	2.75	2.80	2.85	3.00
Wire nails, Chicago	2.90	3.00	3.20	3.35
COKE				
Connellsville furnace, ovens.....	3.00	3.00	2.85	3.85
Connellsville foundry, ovens	4.00	4.00	4.05	4.80
OLD MATERIAL				
Heavy melting steel, Pittsburgh.	19.00	18.60	17.30	16.10
Heavy melting steel, eastern, Pa.	17.50	17.75	15.60	15.50
Heavy melting steel, Chicago..	16.50	16.40	14.75	14.50
No. 1 wrought, eastern Pa.....	18.75	18.75	18.05	18.00
No. 1 wrought, Chicago	15.75	16.70	14.80	15.30
Rails for rolling, Chicago	17.50	17.40	15.50	16.25

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Product Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.

Oct. 29, 1924	Oct. 22, 1924	Sept. 1924	July 1924	Oct. 1923	Oct. 1914
$38.61	$38.65	$39.05	$39.78	$43.84	$22.84

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Iron and Steel Prices

SCRAP PRICES, PAGE 1192; WAREHOUSE, PAGE 1188; ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 1194

Pig Iron

Prices per gross ton

Bessemer, valley	$20.00 to 21.00
Bessemer, Pittsburgh	21.76 to 22.76
Basic, valley	19.00 to 19.50
Basic, Pittsburgh	20.76 to 21.26
Basic, Buffalo	19.00
Basic, del., eastern Pa.	20.00
Malleable, valley	19.50
Malleable, Pittsburgh	21.26
Malleable, Cleveland, del.	21.00 to 21.50
Malleable, Chicago	20.50 to 21.00
Malleable, Buffalo	19.00 to 19.50
Malleable, del., eastern Pa.	21.75 to 22.25

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eas'n and Virgina	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	22.26 to 22.76
No. 1X, Buffalo	21.00 to 21.50
No. 1 foundry, Chicago	21.00 to 21.50
No. 2 foundry, valley	19.00 to 19.50
No. 2 foundry, Pittsburgh	20.76 to 21.26
No. 2 foundry, Buffalo	19.50 to 20.00
No. 2 foundry, Chicago	20.50 to 21.00
No 2 foundry, Granite City	21.50 to 22.00
No. 2 foundry, Ironton fur.	20.00
No. 2 foundry, Cleveland, del.	21.00 to 21.50
No. 2 foundry, del., Phila.	21.26 to 21.76
No. 2 foundry, N. J. tidewater	21.39 to 21.64
No. 2X, eastern del., Phila.	21.76 to 22.26
No. 2X, east. N. J. tidewater	21.89 to 22.14
No. 2X, eastern del., Boston	23.65 to 24.15
No. 2X, foundry, Buffalo fur.	20.00 to 20.50
No. 2X, Buffalo, del. Boston	24.91 to 25.41
No. 2 southern, Birmingham	17.50 to 18.00
No. 2 southern, Cincinnati	21.05 to 22.05
No. 2 southern, Philadelphia	25.30 to 25.80
No. 2 southern Chicago	23.51 to 25.01
No. 2 southern, Cleveland	23.51 to 25.01
No. 2 southern, Boston (rail and water)	24.41 to 24.91
No. 2 southern, St. Louis	22.67 to 23.17
No. 2X, Virginia furnace	24.50
No. 2X, Virginia, Phila.	29.67
No. 2X, Virginia, Jersey City	30.04
No. 2X, Virginia, Boston	30.42
Gray forge, eastern Pa.	20.50
Gray forge, val. del., Pitts.	20.76 to 21.76
Low phos., standard, valley	28.00 to 29.00
Low phos., standard, Phila.	nominal
Low phos., Lebanon, furnace	24.00 to 24.50
Charcoal, Birmingham	30.00
Charcoal, Superior, Chicago	29.04

Silvery iron, Jackson county, Ohio, furnace, 7 to 8 per cent, $29.00; 8 to 9 per cent, $30.50; 9 to 10 per cent, $32.50; 10 to 11 per cent, $34.50; 11 to 12 per cent, $37.00; 12 per cent, $39.50.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 to 11 per cent, $39.50; 11 to 12 per cent, $42.00; 12 to 13 per cent, $44.50.

Silvery and bessemer ferrosilicon prices subject to some shading.

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	100.00
Ferromanganese delivered Pittsburgh	104.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	32.00 to 33.00
Ferrosilicon, 50 per cent contract freight allowed	72.00 to 75.00
Ferrotungsten standard, cents per pound contained	86.00 to 88.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, del.	10.00 to 10.25
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.25 to $3.75
Ferro-carbon-titanium, car lots, producer's plant, net ton	$200.00

†Duty paid.

Coke

Beehive, Ovens
Prices per net ton

Connellsville, furnace	3.00 to 3.25
Connellsville foundry	4.00 to 4.50
New river foundry	8.50 to 9.00
Wise county furnace	3.75 to 4.00
Wise county foundry	4.50 to 5.00
Alabama furnace	4.25 to 4.50
Alabama foundry	4.50 to 5.00
By-Product	
Foundry, Newark, N. J., del.	$10.41
Foundry, Chicago, ovens	10.75
Foundry, New England del.	11.50
Foundry, St. Louis	11.00
Foundry, Granite City, Ill.	9.00
Foundry, Alabama	4.50 to 5.00

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS
4 x 4-inch and larger

Pittsburgh and Youngstown	$35.50 to 36.00
Philadelphia	40.80 to 41.30
Chicago	35.00 to 37.00
Forging, Pittsburgh	41.00 to 42.00
Forging, Philadelphia	45.30 to 46.30

SHEET BARS

Pittsburgh and Youngstown	37.00

SLABS

Pittsburgh	$36.00 to 37.00
Youngstown	35.50 to 36.00

WIRE RODS
¼-inch and finer

Wire rods, Pittsburgh	$45.00 to 46.00
Wire rods, Cleveland	46.00
Wire rods, Chicago	49.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.90c to 2.00c
Universal skelp, Pittsburgh	1.90c to 2.00c
Sheared skelp, Pittsburgh	1.90c to 2.00c

Structural Shapes

Prices per pound

Structural shapes, Pittsburgh	1.90c to 2.00c
Structural shapes, Phila.	2.02c to 2.22c
Structural shapes, New York	2.04c to 2.24c
Structural shapes, Chicago	2.00c to 2.10c
Structural shapes, Cleveland	2.09c to 2.19c
Structural shapes, Birmingham	2.05c to 2.15c

Steel Plates

Tank plates, Pittsburgh	1.80c to 1.90c
Tank plates, Philadelphia	1.82c to 2.02c
Tank plates, New York	1.94c to 2.04c
Tank plates, Chicago	2.00c to 2.10c
Tank plates, Cleveland	1.99c to 2.09c
Tank plates, Birmingham	2.05c to 2.15c

Iron and Steel Bars

Bars, soft steel, Pittsburgh	1.90c to 2.00c
Bars for cold finishing, Pitts.	2.15c
Bars, soft steel, Philadelphia	2.22c to 2.32c
Bars, soft steel, New York	2.24c to 2.34c
Bars, soft steel, Chicago	2.00c to 2.10c
Bars, soft steel, Cleveland	2.14c to 2.19c
Bars, soft steel, Birmingham	2.10c to 2.20c
Bars, soft steel, San Francisco	2.55c
Bars, refined iron, Pittsburgh	2.80c to 4.50c
Bars, rail steel, Chicago	2.03c
Bars, rail steel, mill	1.90c to 2.00c
Bars, reinforcing, billet, Pitts.	2.00c to 2.10c
Bar iron, common, Phila.	2.32c
Bar iron, common, New York	2.34c
Bar iron, common, Chicago	2.10c to 2.15c
Bars, forging quality, Pitts.	2.25c

Hoops, Bands, Strip

Prices per pound f.o.b. mills

Hoops, Pittsburgh, under 5 in.	2.50c to 2.60c
Hoops, Pittsburgh, 20 gage, under 1 in.	2.75c to 2.90c
Bands, Pittsburgh	2.40c to 2.50c
Hot rolled strip steel, Pittsburgh stamping quality	2.25c to 2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland. Chicago and Worcester, Mass. $3 per ton higher.	4.00c

Cold Finished Steel

Prices per pound

Cold finished steel bars, drawn or rolled Pittsburgh, Chicago, carloads	2.70c
Cold-finished steel bars, drawn or rolled Pittsburgh, Chicago, less carloads	2.95c
Steel shafting, turned and polished Pitts., Chicago	2.70c

Cold finished bar and shafting base Cleveland $1 higher than Pittsburgh and Chicago.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45, mill	1.80c to 1.85c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.70c to 2.80c
Spikes, small railroad, 7/16-inch and smaller, Pittsburgh	3.00c to 3.15c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts. standard	3.75c to 4.00c
Track bolts, Chicago	3.80c
Tie plates, Pittsburgh	2.30c
Tie plates, Chicago	2.30c

Wire Products

To Jobbers in Carloads
Prices per pound

F.o.b. Cleveland and Pittsburgh	base
Wire nails	2.75c
Galv'd nails, 1-inch and over	3.00c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire, No. 9 gage	3.10c
Barbed wire, painted	3.20c
Barbed wire galvanized	3.45c
Polished staples	3.20c
Galvanized staples	3.45c
Coated nails, count keg	2.10c to 2.15c
Woven wire fencing (retailers) 12½ gage, 26-in. high 7 bars and 12-in. stays per 100 rods, f.o.b. Pittsburgh	$20.03

Joliet, DeKalb and Waukegan, Ill., $2 per ton over Cleveland-Pittsburgh base on products made there, Worcester and Fairfield, Ala. $3 higher. Duluth $4 higher. Chicago delivered price $3 higher.

Sheets

Prices per pound

SHEET MILL BLACK

No. 28, Pittsburgh base	3.40c to 3.50c
No. 28, Philadelphia, delivered	3.62c to 3.72c
No. 28, Gary, Indiana Harbor	3.60c
No. 28, Chicago, delivered	3.65c

TIN MILL, BLACK

No. 28, Pittsburgh, base	3.40c to 3.50c
No. 28 Gary base	3.60c

GALVANIZED

No. 28, Pittsburgh, base	4.50c to 4.60c
No. 28, Philadelphia, delivered	4.82c to 4.92c
No. 28, Gary, Indiana Harbor	4.70c
No. 28, Chicago, delivered	4.75c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.60c to 2.70c
No. 10, Philadelphia, delivered	2.92c to 3.02c
No. 10, Gary, Indiana Harbor	2.80c
No. 10, Chicago, delivered	2.85c

AUTOMOBILE SHEETS

No. 22, Pittsburgh, base	4.60c

Tin Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$5.50

Gary, Ind. base 10 cents higher

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind. and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—f.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Chain, Piling, Cut Nails

Prices per pound

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	1.95c to 2.05c
Cut nails, f.o.b. mills	2.90c

Hot Rolled Alloy Steels

Price per pound, Pittsburgh bars

S. A. E. Series—	
2300 (3½ per cent nickel)	4.75c
3100 (nickel chromium)	3.65c to 3.75c
6100 (chrome vanadium)	4.50c to 4.75c
6100 (Chrome vanadium spring)	4.00c to 4.25c
9250 (Silico manganese spring)	3.15c to 3.50c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar price; under 4 x 4 to 2½ x 2¼ inch $5 higher.

Chicago base price, $2 per ton above Pittsburgh.

Mild Interest in Scrap

Consumers Taking Some Tonnage and Prices Hold Steady, Though Total Is Small—Sentiment Regarding Future Is Improving

SCRAP PRICES, PAGE 1192

Chicago, Oct. 28.—Dealers in iron and steel scrap are experiencing a lively market in the steel grades, but it is strictly their own market as consumers generally are unwilling to buy except when they can pick up occasional lots at reasonable prices. Heavy melting steel has moved up to a range of $16.50 to $17, with some dealers paying $17 to cover their short position on contracts at $16.50. Malleable grades have stiffened, although the leading consumers appear not to have bought recently. On the strength of dealer trading, cast borings are quoted at $12 to $12.50, No. 2 wrought $16.50 to $17, compressed sheets $13 to $13.50 and rerolling rails $17.50 to $18. Steel angle bars, steel car axles, rolled steel wheels, No. 1 railroad cast, compressed and loose sheets, and railroad specialties also have advanced. The Burlington railroad is offering 9575 tons and the Chicago & Alton and the Chicago, Milwaukee & St. Paul 1000 tons each.

Trading Light Prices Uncertain

Boston, Oct. 28.—Scattered inquiry from Pennsylvania steel works serves to keep up mild interest in heavy melting steel. Prices are soft and local demand is almost negligible. Several cars have recently been sold for shipment into Pennsylvania at $12 shipping point. One sale of a good grade of rails brought $13 in the recent trading. Demand is less and the price of steel shafting has dropped. One dealer is quoting $18.50 shipping point but in the absence of sales the price is uncertain. Mixed borings and turnings are offered at $8.50 shipping point, with demand light but inquiry showing improvement. Recent activity in cast grades has been succeeded by a further lull. Strictly textile castings have been offered at $18.50 shipping point. A few sales of No. 1 cast and textile mixed have been made at the same figure.

Buffalo Shows Strength

Buffalo, Oct. 28.—A slightly stronger tone in iron and steel scrap is shown, due to better demand and larger shipments on contracts. Heavy melting steel is worth around $17, with sales within the past week 50 cents over and under that average. Buyers say dealers have overemphasized the significance of recent rejections and reductions for quality shortcomings of material and insist fair prices are being paid. A fair volume of new business is being done here and consumers are keeping up fair stocks. Dealers have been active buyers for shipment on contracts. Hydraulic compressed sales have been fairly large with prices averaging $16 to $16.50. Similar quotations are reported on recent sales of No. 1 busheling. Rails are scarce and could be sold in quantity up to $17, dealers report.

Marks Time at New York

New York, Oct. 28.—Iron and steel scrap is featureless, with the trade marking time. While some substantial tonnages are under negotiation, it is doubtful if there will be much buying before election. The only price change of the past week has been a reduction of 25 cents in turnings, dealers now offering around $9.50 to $10, New York.

Recent fairly good buying of heavy cast has subsided. Supplies are substantial and there is little doubt a consumer desirous of a round tonnage, could obtain concessions. Recent buyers of cast scrap are the Ramapo Foundry & Wheel Works, Ramapo, N. Y.; the American Brake Shoe & Foundry Co., West Mahwah, N. J.; and the Florence Foundry & Machine Co., Florence, N. J. The latter was probably the largest purchaser, closing on at least 1000 tons.

Little buying of melting steel has been noted since the Bethlehem Steel Corp., Bethlehem, closed on 35,000 tons, reported in a previous issue. Dealers' buying prices on railroad steel or the equivalent, for that point continue to hold around $16, delivered.

Buyers and Sellers Optimistic

Pittsburgh, Oct. 28.—More optimisim is present in the iron and steel scrap trade both from a buying and from a selling standpoint. Consumers returning from the American Iron and Steel institute meeting in New York immediately commenced to sound out the market and a few small sales have resulted. Negotiations are being conducted quietly as usual for fear of the market swinging upward on the strength of demand. A few sellers have practically withdrawn from the market until after election, believing they will be able to obtain higher prices. A few sales of limited tonnage have been made, some between dealers at around $19 for heavy melting steel. The market is still quoted at $18.50 to $19. A nearby melter recently closed on 2000 tons of heavy melting steel between these figures. Cast iron borings are weaker by 50 cents, nothing higher than $15 to $15.50 now being obtainable, but heavy breakable cast on the strength of some sales has advanced $1, to $16 to $16.50.

Buying Is Scattered

Cincinnati, Oct. 28.—Trading in iron and steel scrap continues of scattered character and demand is not sufficient to absorb offering. For this reason prices continue to sag. Dealers have not lowered quotations since a week ago. Dealers have no trouble in obtaining tonnage. Railroad offerings show an in-

(*Concluded on Page* 1143)

Prices of Billets Are Down

Large Size Offered by Valley Makers at $35.50—Slabs at Same Level—Sheet Bars $37—Producers Still Waiting for Business

SEMIFINISHED STEEL PRICES, PAGE 1133

Pittsburgh, Oct. 28.—Buyers of semifinished material in Pittsburgh and vicinity have been canvassing the market thoroughly and are unable to locate the low quotations which have lately been given publication. Sheet bar specifications are coming in heavily at the $37 price and that represents the quotable market, although no new inquiries are out. Some steel producers will go to $36 on 4 x 4-inch rerolling billets although one or two middle interests possibly will sell at $35.50. On small rerolling billets, $37 is the minimum and some makers quote $38. Forging billets are quoted at $41 to $42 and some have contracts on their books at $43 against which they are receiving shipping instructions. No new inquiries for rerolling billets are out, although the Superior Steel Corp. recently has been an active purchaser at $37. Wire rods still are quoted at $45 to $46, and skelp at 1.90c to 2.00c, with no inquiries out.

Covering Orders in Hand

Youngstown, O., Oct. 28.—Consumers of sheet bars in this district are buying only such quantities as are covered by orders. Specifications are coming out from users under contract but the tonnage involved is not large. While no inquiries are up for quotation the asking price on this commodity is $37, mill. A similar situation maintains in the billet and slab market. Little tonnage has been under negotiation for several weeks and current inquiry is lacking. On billets 4 x 4 inch and larger, makers are asking $35.50, and on 4 x 4 inch and smaller $37, producer's mill, is quoted.

Market Is Untested

Cleveland, Oct. 28.—The market for sheet bars, billets and slabs is exceptionally quiet. No transactions are reported this week that would indicate prices here, although nominal quotations from one interest place sheet bars at $37.50 and billets and slabs at $37, mill. Prices quoted by some of the valley makers are understood to be well under these figures. Specifications on contracts are sufficient to maintain steady operations.

Mill Prices More In Evidence

Philadelphia, Oct. 28.—Several round lots of billets were sold in the past week. Billet sales are being made more on mill prices, but these are figured largely from a Pittsburgh base. The current market on rerollers is $40.80 to $41.30, delivered, Philadelphia. Forging billets are $45.30 to $45.30.

Strip Orders Heavier

STRIP PRICES, PAGE 1133

Pittsburgh, Oct. 28.—One or two makers of hot and cold-rolled strip steel in this territory have orders for the month to date 200 to 300 tons ahead of September sales in the same period. Operations are about 50 per cent of capacity although one important producer is close to 60 per cent. At the moment, about two tons of hot strips are sold for every ton of cold although this ratio is not

unusual. The cold-rolled price, 4.00c f.o.b. Pittsburgh district mills, is firmer than hot strip prices although in New England competition is particularly keen, especially in the New Britain, Conn., district. Makers find it practically impossible to meet the conditions there even through freight absorption. The hot strip prices, 2.25c to 2.50c, represent the full spread of the market, the minimum being made by certain hot strip makers when competing with sheet and plate makers on wide sizes.

Sales at $100

Made In English Ferromanganese—Varied Prices Named on Spiegel

FERROALLOY PRICES, PAGE 1133

New York, Oct. 28.—Fully 1000 tons of English ferromanganese have been sold during the past week at the new price of $100 duty paid tidewater and the market generally seems firm at this price. A small tonnage of German ferromanganese now is enroute to this country. The asking price on German ferromanganese also is $100 duty paid tidewater. A number of small sales of spiegeleisen have been made during the past week. This business is bringing $32 to $33 furnace for 20 per cent metal. On large lots a lower price is possible.

October shipments of ferrosilicon and ferrochrome have exceeded those for any month since March. Requirements of the general steel, alloy steel and tool steel trades are increasing and the ferroalloy markets are showing more life. New business remains light in most lines, as chrome and silicon consumers are under contract, while the tool steel trade has been well supplied with tungsten. Vanadium sales this month have been excellent. Prices are unchanged throughout the list of ores and alloys.

Activity Continues To Dwindle

Pittsburgh, Oct. 28.—Sales and inquiries for ferroalloys continue to dwindle. Except for a few single carload inquiries for ferromanganese, practically nothing is being done. On these, $100, Atlantic seaboard base, is being quoted by domestic producers, the same figure c.i.f. Atlantic seaboard, duty paid, being named by importers. Intimations already are being made that further price advances are contemplated.

In ferrosilicon, while the commonly quoted prices are $72 to $75, freight allowed, Pittsburgh district, a lower price around $70 which has appeared in recent weeks still is being named. Few inquiries are out. An inquiry is current involving 400 to 1200 tons of spiegeleisen. The consumer possibly will buy 400 tons for shipment over the remainder of the year, or 1200 tons for shipment to April 1. From $32 to $33, furnace, is usually quoted on single carloads of the 19 to 21 per cent material, but on 1000-ton inquiries $30 would be done.

Fluorspar Is Active

New York, Oct. 28.—Small tonnages of German and French fluorspar continue to be sold in eastern territory. Several importers are sharing in this business and the tonnage involved is fairly large. Prices continue to range from $17 to $18 per net ton, duty paid tidewater for the 85 and 5 per cent grade, depending on tonnage.

Coke Purchases Deferred

Furnace Interests Determined To Obtain First Quarter Fuel at $3 to $3.15—Activity Confined To Shipments on Contract

COKE PRICES, PAGE 1133

Pittsburgh, Oct. 28.—Connellsville beehive coke activity is practically confined to shipments on contracts, with an occasional new order booked. A nearby independent steel company is understood to have bought November tonnage from the same source that furnished it coke for October, at or near $3. One inquiry now is current from an active blast furnace, sometimes using West Virginia coke and sometimes Connellsville. It calls for 10,000 tons. The buyer is determined to pay no higher than $3. One or two inquiries also are out for the first quarter. Some makers refuse to quote below $3.25. Whatever negotiations are underway probably will be deferred until after election. Several small sales are noted in the spot market, one to five carloads at a time bringing figures all the way from $3 to $3.15. A few medium sulphur coke sales are noted, usually in small lots at $2.75 to $3, although some first drawings recently were sold at $2.50.

No refineries now are inquiring. A majority are covered to the end of the year and some into the first quarter. Foundry coke buying is spasmodic, small orders being booked at $4 to $4.50. Additional orders of this grade are promised by foundries which have orders coming to them in case Coolidge is re-elected. No standard foundry coke is sold below $4, minimum. Occasional sales of premium brands are noted at $5 and higher.

Production in the Connellsville region for the week ended Oct. 18 was 84,610 tons, as compared with 82,920 tons the preceding week, according to the *Connellsville Courier*.

Foundry Demand Is Light

New York, Oct. 28.—Demand for foundry coke is much smaller here than is usual at this time of the year. Hence, the market is receiving very little support. Ordinary brands of beehive foundry coke are bringing $4.25 to $4.50 Connellsville for spot shipment with special brands at $5 to $5.50. There is no contracting. On by-product foundry coke the market continues $10.41 delivered at Newark and other northern New Jersey consuming points.

Orders More Numerous

Cincinnati, Oct. 28.—Coke in the Cincinnati market is stiffer than for six weeks. While large consumers are not buying there is a volume of orders for small tonnages. Demand for domestic coke is expanding and more orders are noted for foundry and furnace fuel. The latter is displaying more activity than in several months. The Union Gas & Electric Co., Cincinnati, has not as yet closed on its inquiry for 8000 tons of 48-hour furnace coke for December and January shipment. By-product ovens report exceptionally heavy specifications for the past week. Producers of Pocahontas coke have no free tonnages to offer for the balance of the year. Prices remain unchanged. While the market on New River foundry coke ranges from $8 50 to $9 ovens, some brands are available at $6.50 to $7 ovens. Producers of high silicon iron are testing out the market for their first quarter coke requirements.

Purchases Are Frequent

St. Louis, Oct. 27.—Demand for foundry coke continues active. While sales are confined to small lots, ordering is frequent. By-product manufacturers report improvement in the demand from the West and Southwest, there being general disposition to stock up for the winter. Little interest is manifested in eastern coke, all local requirements being supplied by the by-product interests. Prices are unchanged on all grades and sizes.

Market Slightly Improved

Birmingham, Ala., Oct. 27.—Independent coke producers in the South are shipping considerable of their product out of the home territory, one company moving upwards of 1000 tons daily. The Black Creek Coal Co. has 60 beehive coke ovens in operation at New Castle. Quotations for coke still range from $4.50 to $5. It is expected that immediately after election a general improvement in conditions will be noted. The iron and steel manufacturing companies have a large tonnage of coke on hand.

September Auto Output Shows Some Gain

Washington, Oct. 28.—The production of automobiles in September as reported to the department of commerce by 205 manufacturers amounted to 288,008 passenger cars and trucks. The number of passenger cars was 257,947 and of trucks, 30,061. For the first time since February truck output in September was greater than a corresponding month in 1923. The production of cars and trucks during the month was 3 per cent greater than the August total and 17 per cent greater than it was at the bottom level of the year in June. The output for nine months amounted to 2,828,156 against 3,032,083 in the same period of 1923. The monthly record of output follows:

Passenger Cars

	1922	1923	1924
January	81,696	223,822	287,353
February	109,171	254,782	336,374
March	152,962	319,789	348,356
April	197,224	344,661	337,045
May	232,462	350,460	279,453
June	163,053	337,442	217,943
July	225,103	297,413	237,668
August	249,498	314,431	251,551
September	187,711	298,964	257,947
October	217,582	335,041	.....
November	215,362	284,939	.....
December	208,016	275,472	.....

*Revised.

Trucks

	1922	1923	1924
January	9,596	19,732	28,925
February	13,360	22,173	31,153
March	20,036	35,284	34,118
April	22,665	38,085	36,156
May	24,120	43,730	33,412
June	26,354	41,173	27,874
July	22,083	30,692	25,215
August	24,711	30,872	27,510
September	19,495	28,578	30,061
October	21,824	30,139	.....
November	21,967	28,073	.....
December	20,394	27,762	.....

*Revised.

Bar Situation Stronger

Hint of Advance of $2 Causes Some Consumers to Buy—Waiting for Election Still Prevents General Activity

BAR PRICES, PAGE 1133

Chicago, Oct. 28.—Appraisals of the soft steel bar market are varied, with some makers reporting continuance of increased buying that has characterized the past month. But the market as a whole gives evidence of a waiting attitude by many buyers in view of the proximity of election. Freight car builders and the railroads are still the most noticeable buyers. A few of the larger consumers in general lines appear to have sensed that a favorable election will mean higher prices and have protected themselves. Implement manufacturers have submitted improved specifications. One producer observes that the downward tendency in price has been stopped and that any change will be upward. Another producer has been giving consideration to an advance of $2, feeling that it has booked all the business it wants at present levels. However, a range of 2.00c to 2.10c, Chicago, still prevails.

A slight stiffening is claimed in rail steel bars and the least that can be done is said to be 2.00c, mill, or 2.03c, Chicago. One maker not in the Chicago district proper has been asking 2.10c, mill. Bookings are fair.

One maker of bar iron is pressed to maintain single turn operations four days a week, and this about describes the bar iron situation. Neither improvement nor a recession can be discerned. The quotation is unchanged at 2.10c to 2.15c, Chicago.

Boston Sales Improve

Boston, Oct. 28.—Total bar sales in the greater Boston district during the past week showed marked improvement. A leading seller entered a tonnage fully 50 per cent above that of the previous week. Other mills report an increase in sales although less pronounced. Prices remain nominally unchanged though shading has come to light in scattered instances. A two car sale at 2.365c delivered has been confirmed.

Buffalo Buying Lightly

Buffalo, Oct. 28.—Bar buying is on a restricted scale with users taking in only such material as they expect to consume within 30 days, as a rule. Prices are steady, averaging 2.265c, Buffalo, which is equivalent to the old 2.00c Pittsburgh base.

Price Advance Intimated

Pittsburgh, Oct. 28.—Intimations of $2 advance in merchant steel bars, making the maximum figure 2.10c, f.o.b. Pittsburgh district mills, has had the effect of causing a number of customers to send in orders and specifications. One steel interest yesterday booked orders for 4000 tons at 2.00c. Smaller orders were received by various sellers here and recent bookings have been heavier than in the preceding two weeks. For several weeks, specifications have been coming in in small lots for current needs as buyers believed they were in the midst of a falling market. These now are changing their attitude. While reports of 1.90c have been current on steel bars, it is understood this figure applied only when bars were bought in conjunction with large lots of other structural material or by large railroad car builders.

Refined iron bars are unchanged 2.90c to 3.00c being the prevailing quotations, with up to 4.50c quoted on double refined iron. Demand is slightly better.

Prices Show More Strength

Cleveland, Oct. 28.—A stronger tone is apparent in the steel bar market. Prices are stiffer. Where 2.09c, Cleveland, equivalent to 1.90c, Pittsburgh was available on attractive lots recently, this appears now more difficult to obtain and the market is crystallizing on a basis of 2.19c, delivered, or 2.00c, Pittsburgh. Orders are coming in freely in smaller lots and the total shows some gain over the corresponding period last month. Action on some larger tonnages is being deferred, pending the approaching election. A spring manufacturer who has been figuring on 12,000 tons of carbon and alloy steel for 1925 delivery, has not yet closed though it is reported to have had several quotations beyond Jan. 1, at least for the first quarter. Some mills are asking at least $2 per ton advance for that period over the current market. Hoops and bands of regular character are unchanged at 2.40c to 2.50c Pittsburgh with wide bands going down to 2.10c to 2.15c, Pittsburgh base.

Independent manufacturers have adopted the new base price at Cleveland on cold-finished steel and shafting which is now placed $1 per ton higher than Pittsburgh or Chicago. This makes the Cleveland price 2.75c against 2.70c for Pittsburgh and Chicago.

Cold-Finished Buying Fair

Pittsburgh, Oct. 28.—For three or four weeks cold-finished steel bar buying has been quiet. Purchases have been limited but producers claim this was natural during a period of readjustment. Cold finishers have not been ordering because they expected lower figures and their customers have felt the same way. The introduction of 2.75c base at Cleveland, an advance of $1 per ton, by the American Steel & Wire Co. is exerting a helpful influence. The market here is quoted at 2.70c with a 25-cent differential for less-than-carload quantities. Buying is by diversified industries, with the automotive trade holding up its end.

Nut, Bolt, Rivet Orders Are Growing

NUT AND BOLT PRICES, PAGE 1194

Pittsburgh, Oct. 28.—Orders for nuts and bolts gained last week and the present week bids fair to maintain the same ratio of increase. Manufacturers, structural shops and railroad car shops, have figured as purchasers, jobbers having previously stocked up at third greater prices. Contracts taken since the first of the month have all been at the higher levels represented by the discount of 60 and 10 off on large machine bolts. Rivet business last week was not strikingly large, only a few small orders being booked including several single carloads. However, 2.60c remains the firm price here. Occasionally small establishments have offered concessions below cost but most makers refuse to sell at a loss. Practically all regular customers of rivet producers in this vicinity are under contract at 2.60c. The discount on small rivets is still unclarified, for while 70, 10 and 5 off is considered the regular market, numerous other quotations have been current, concessions of 5 or 10 per cent being made. Nut, bolt and rivet makers are operating about 40 per cent of capacity.

Cleveland Made Base on Rivets

Cleveland, Oct. 28.—Bolts and nuts are being sold by makers here on prices based at Chicago and Pittsburgh. Consumers east of the Ohio-Indiana line are quoted a Pittsburgh base price while west of the line a Chicago base price is quoted. One large marker is quoting Pacific coast consumers a price based at Pittsburgh, this because of the fact it ships by water.

The leading rivet manufacturer is gradually working away from Pittsburgh as a base and has done business f.o.b. Cleveland and Chicago, although Pittsburgh still acts as a base in a majority of sales.

A good volume of orders is being received by rivet makers and the pre-election uncertainty is thought to be holding back considerable business. Prices are firm at 2.60c Cleveland and Pittsburgh, and 2.75c Chicago on large rivets and 70, 10 and 5 off Cleveland and Pittsburgh and 70 and 10 off Chicago on small rivets.

Marking-time in Evidence

Chicago, Oct. 28.—New business in bolts and nuts is a trifle off but makers attribute it wholly to the approach of election. While a few Detroit automotive interests are fair buyers, a majority are below normal. Prices are said to be firm on the basis of 60 and 10 off for large machine bolts, 70 and 10 off for small rivets and $2.75 for large rivets.

Hoop Demand Is Spotty

HOOP PRICES, PAGE 1133

Pittsburgh, Oct. 28.—Hoop and band demand is spotty, small orders being the rule. One maker reports ability to make relatively few sales in these sizes, while others state that mills rolling hoop and band sizes are the busiest in their hot strip departments. Hoops usually are quoted at 2.50c to 2.60c, with 2.75c and higher applying on the narrow sizes. Bands are quoted at 2.40c to 2.50c.

Iron Buyers Showing More Confidence

(*Concluded from Page* 1132)

chine shops, and indications are that the total melt this month will show a good gain over the preceding month, and the corresponding period a year ago.

Sales of pig iron during the past several days total around 9500 tons. Of this amount 6900 tons was sold by the St. Louis Coke & Chemical Co., 3000 tons of basic going to a nearby Illinois melter, and approximately 1500 tons of foundry to local stove builders, with the remainder to job plants and miscellaneous users. An engine builder took 200

tons for balance of year shipment, and a western Missouri melter purchased 300 tons of southern iron for prompt delivery. Southern iron seems to be firmly established at $17.50 to $18, and northern at $20.50 to $21. The leading local producer continues to quote $21.50 to $22, f.o.b. Granite City.

Buying Movement Believed Near

Birmingham, Ala., Oct. 27.—Orders and inquiries for pig iron from outside the home territory are light in number and tonnage. Practically all of the business being transacted now is in the home section. Purchasing is in lots ranging from one car to 500 tons. A pre-election lull is noted, but the belief is expressed that within a few weeks a buying movement will be started. Quotations are given at $18 for No. 2 foundry iron. Some sales are being made at $18.50.

Buyers Picking Up Bargains

Philadelphia, Oct. 28.—Steady buying by the United States Cast Iron Pipe Co., and R. D. Wood & Co., making large totals, features the pig iron market here. These interests are picking up bargains here and there. The Wood company is reported to have bought a substantial tonnage of foreign iron. The Pennsylvania railroad is inquiring for 1000 to 2000 tons of No. 2X iron and high manganese iron for first quarter, and probably will buy 5000 to 8000 tons. The Sun Shipbuilding Corp., which inquired for 1500 tons of foundry iron for the next six months has not yet purchased.

Eastern foundry minimum seems $20.50, base furnace, while sales are being made at $21, base. The market is 50 cents to $1 higher than a week or two ago. Several moderate lots of low phosphorus iron were sold, both copper-free and copper-bearing, at unchanged prices. Basic is featureless. Virginia foundry iron continues $24, base furnace.

Lavino Furnace Co., last week blew in its furnace at Marietta, Pa., on ferromanganese, making three furnaces now active for that company on this metal, the other two being at Lebanon, Pa., and Reusens, Va.

Wire Demand Good

Some Irregularities Develop But Situation Is Little Changed

WIRE PRICES, PAGE 1133

Chicago, Oct. 28.—Wire and wire products makers are experiencing a moderate pre-election decline in business although a few buyers are looking ahead and placing some forward business. Nails are moving well. Barbed wire and fencing for fall delivery are improving. The leading maker's western delivered prices are 2.60c, base Waukegan and Joliet, for plain wire and 2.85c, base Joliet and Waukegan, for wire nails.

No Marked Change Noted

Pittsburgh, Oct. 28.—Conditions in wire products show no marked change from a week ago although prices are slightly firmer. Plant operations continue about 60 per cent of capacity in this territory with nail specifications fair and wire demand limited. Relatively little fencing is being sold. Base prices at Cleveland and Pittsburgh are unchanged at 2.50c on plain wire and 2.75c on wire nails.

Plate Tonnages Figured

B. & O. Car Repairs Call for 15,000 Tons—New Lake Boat Will Need 5000—Moderate Buying Elsewhere—Prices Lack Firmness

PLATE PRICES, PAGE 1133

Philadelphia, Oct. 28.—Recent improvement in plate buying has maintained operations of eastern mills at 50 per cent or greater. The Pennsylvania railroad placed additional tonnage, said to involve requirements for 50 locomotives to be built at Altoona, Pa. The Baldwin Locomotive Works now is bidding on 50 locomotives for the Wabash. Eastern mills are paying more attention to mill prices, but this appears to be due more to a desire to lose no more money than necessary rather than a desire to eliminate Pittsburgh plus. The current market is 1.50c to 1.60c, base Pittsburgh, but mills are refusing business which would bring a mill price lower than 1.65c to 1.70c.

Plate Prices Lower

Boston, Oct. 28.—Eastern plate mills quoting mill prices for delivery into New England have caused keen competition in this district and prices have dropped rapidly until at present plates are obtainable at 1.965c delivered, or 1.60c base Pittsburgh. Sales are not heavy but inquiry shows increased volume.

Moderate Buying Still Rules

Pittsburgh, Oct. 28.—Moderate buying still is the rule among purchasers of steel plates for tanks, boilers and fire boxes. However, some buyers give indication of more interest and steelmakers are talking of an advance of $2 per ton. No large inquiries are before the trade for oil storage tanks although some plates for barges may be purchased soon. The Dravo Contracting Co., Neville Island, is low bidder on 12 barges for the Mississippi River commission, Memphis, Tenn., taking about 3000 tons. Bids originally were filed on five barges on which the Sun Shipbuilding & Dry Dock Co., Chester, Pa., was low bidder. One blast furnace job involving about 1500 tons has been placed with a local fabricating shop, but the final details are not as yet arranged. Small projects including one or two oil tanks, involving about 200 tons of plates, are fairly numerous. Some of the boiler shops occasionally order 100-ton lots. Plates are unchanged at 1.80c to 1.90c, with the tendency upward.

Car Repair Tonnage Wanted

Cleveland, Oct. 28.—Large steel requirements are pending for car repairs for the Baltimore & Ohio railroad, these amounting to 15,000 tons and made up in two lots of 8000 and 7000 tons, respectively. This is the principal plate requirement now in sight. Another important prospective tonnage is for a new ore freighter for the Cleveland Cliffs Iron Co. which is now being negotiated with lake yards. About 5000 tons of steel will be required. Another lake freighter for New York interests is reported to be taking form. Miscellaneous orders for plates are keping up in fair volume. Prices show no improvement, ranging from 1.99c to 2.09c, delivered Cleveland, equivalent to 1.80c to 1.90c, base, Pittsburgh. The lowest prices reported have been on locomotive steel where attractive extras are involved.

Specifying, Not Buying

Chicago, Oct. 28.—Tank fabricators' activity in the plate market has been on the side of specifying against contracts rather than on new buying. The large oil country business in tanks still is pending. Car builders have been less active factors the past week. Production of plates has not suffered appreciably in the past week, and basic conditions are better than the volume of buying indicates. One producing interest is considering stiffening its price while another predicts that any change will be in an upward direction. The range at this time continues 2.00c to 2.10c, Chicago.

Steel Corporation's Net Shows a Decline

Third quarter earnings of the United States Steel Corp. amounted to $30,718.415, according to the report made public Tuesday. In the preceding quarter the earnings were $41,381,039 and in the third quarter of 1923 they were $47,053,680. The company again declared an extra dividend of 50 cents a share upon common stock together with the regular quarterly dividends of 1¼ per cent on common and of 1¾ per cent on preferred. After all deductions and regular and extra dividends the statement reveals a deficit of $122,102. This compares with a surplus reported for the quarter ended June 30 and with a surplus of $15,078.479 in the September quarter of 1923.

The earnings for the third quarter compared with the second quarter of 1924 and the corresponding period last year, follows:

	Third quarter 1924	Second quarter 1924	Third quarter 1923
July	11,096,288	*$16,048,911	$15,767,003
August	10,773,079	13,419,194	16,997,467
September ..	10,845,693	11,912,934	14,289,210
Total earnings after operating and maintenance expenses and taxes ...	30,718,415	41,381,039	47,053,680
Depreciation and sinking fund	10,853,513	12,770,715	13,127,769
Net income	19,864,902	28,610,324	33,925,911
Interest and bond premium ..	4,786,792	4,835.033	4,917,976
Balance ...	15,078,110	23,775,219	29,007,935
Dividends:			
Preferred .	6,304,919	6,304,919	6,304,919
Common .	6,353,781	6,353,781	6,353,781
Common extra .	2,541,512	2,541,512	.....
Less addition	.....	.....	10,000,000
Balance for surplus ..	**122,102	8,575,079	6,349,235

*April, May and June in second quarter.
**Deficit.

Net profits of the Air Reduction Co. for the third quarter of 1924 were $350,040 compared with $655,703 in the same period of last year. The gross income during the quarter was $2,082,390 compared with $2,588,890.

Concrete Sales Are Small

Project at Oakland, Cal., to Take 5000 Tons—Philadelphia Subway Contract Let Involving 2000 Tons—Road Work Is Potential

REINFORCING BAR PRICES, PAGE 1133

Chicago, Oct. 28.—Demand for reinforcing bars continues brisk, but the price situation is not satisfactory. Contractors' bids are in on secton 3 of the South Water street double-decking and plans for section 1 have just been issued; these sections aggregate 1500 tons of bars. Bar sellers have just received plans for the concrete work on the Hotel Morrison addition, for which Holabird & Roche, 104 South Michigan avenue, are architects. Plans for the Union League club building are expected shortly. The 300 tons in the Kinzie building, for which David Saul Klafter, 64 West Randolph street, is architect, are expected to go rail steel. Considerable Illinois road and bridge work comes up at Springfield, Nov. 12 and 26. It is reported that the 240 tons of bars in the Crane Co. plant addition were bought for less than 2.00c, Chicago warehouse. The range on reinforcing bars continues 2.00c to 2.15c; Chicago warehouse, although some recent lettings seem to provide justification for a wider spread.

Will Buy In Spring

Pittsburgh, Oct. 28.—Some projects requiring large tonnages of concrete bars are in the formative stage, and many will not be closed until spring. About 1200 tons will be required for the University of Pittsburgh stadium here but this will not be bought now. New steel concrete bars are quoted at 2.00c although some dealers still are trying to obtain 2.10c.

Little Inquiry Is Out

Buffalo, Oct. 28.—Little new inquiry is out for reinforcing bars. One lot of about 300 tons, for a Buffalo school, is pending. Several highway contracts will be awarded early in November, involving several hundred tons of bars. Prices on mill shipment average 2.10c, Pittsburgh and on stock bars, 2.25c.

Fall Lull In Full Swing

Cincinnati, Oct. 28.—Sales of concrete bars declined during the past week. Apparently the fall lull now is in full swing. Many projects now are being held up, presumably until after the election. One dealer reports having placed several small orders in the Indianapolis and Columbus districts and practically the only new inquiry reported is in the Cincinnati district. The ferro Concrete Construction Co. is inquiring for 400 tons for the new additions to the Alms hotel, Cincinnati for which it has the general contract. A number of other jobs involving 50 to 100 ton lots are pending. The price on bars for shipment out of warehouse is 3.30c base Cincinnati.

Reservoir To Take Large Tonnage

Seattle, Oct. 25.—Bids have been opened on the American Falls reservoir project, American Falls, Ida., requiring 1188 tons of reinforcing steel, in addition to 420 tons of structurals and other materials. Construction activity is calling for considerable tonnage, although individual lots are small. German bars are offered at 1.80c, but the low price for domestic is 2.35c. Warehousemen are maintaining 3.25c.

5000-Ton Lot To Be Bought

San Francisco, Oct 25.—Featuring recent awards of reinforcing bars is the placing of 1000 tons for the Hills Bros. warehouse, the contract going to Edw. L. Soule Co. Mills and distributors are working on a 2.50c, base for carload lots on bars. Pending concrete business totals about 5000 tons. Within 60 days bids will be called for nearly 5000 tons of reinforcing steel for the Estuary tube between Oakland and Alameda, Cal.

Bids Rejected On 19,000 Tons

Cleveland, Oct. 28.—Of chief interest in the local reinforcing concrete bar market is the rejection of propositions of several mills made in connection with the inquiry by the Cleveland Union Terminals Co. for 19,000 tons, to be spread over five years delivery. A limited amount of several hundred tons will be purchased for immediate needs only. Small work continues to constitute the bulk of going business, with several fabricators reporting the largest bookings of the week under 50 tons each. Prices on new steel bars continue weak and untested at 2.09c to 2.19c, Cleveland, equivalent to 1.90c to 2.00c, Pittsburgh. Rails steel bars are at 1.90c, mill with lower possibly on an attractive lot. Bars out of warehouse continue at 2.25c, Pittsburgh to 3.10c, Cleveland.

Prices Stiffen At Philadelphia

Philadelphia, Oct. 28.—Concrete bar prices are somewhat stiffer here with the usual mill lots going at 2.10c to 2.15c, Pittsburgh, with 2.00c, Pittsburgh, occasionally being done on large lots. Stock prices are 2.15c to 2.30c, base Pittsburgh, with numerous fair sales reported at the latter figure. Philadelphia warehouse prices are around 2.75c, base Philadelphia.

Inquiries for concrete bars current in the Philadelphia district total fully 5000 tons.

CONCRETE CONTRACTS PLACED

Awards this week	1,790 tons
Awards last week	2,580 tons
Awards two weeks ago	1,520 tons

1000 tons, Hills Bros. warehouse, Steuart and Harrison streets, San Francisco, to Edw. L. Soule Co.; A. J. Walker, general contractor.

450 tons, Illinois road work, to Olney J. Dean & Co.

240 tons, additions to Crane Co., Chicago, to Kalman Steel Co.; general contract to Starrett Bros., 160 North LaSalle street, Chicago.

100 tons, miscellaneous work including one carload for the plant of the Findlay Clay Pot Co., Washington, Pa., to the Concrete Steel Co., Pittsburgh, through the Austin Co., Cleveland, general contractor.

CONCRETE CONTRACTS PENDING

19,000 tons, requirements for five years for Union Terminals Co. project, Cleveland; mill propositions rejected. Limited tonnage will be purchased for immediate needs.

4500 to 5000 tons, reinforcing steel for Estuary tube between Oakland and Alameda, Cal.; bids in about 60 days; Geo. A. Posey, chief engineer Oakland, Cal.

2000 tons, second unit of Broad street subway, Philadelphia, general contractor, Patrick McGovern, Inc., New York.

1200 tons, University of Pittsburgh athletic stadium, Pittsburgh; order to be placed next spring.

400 tons, plant building for the Capstan Glass Co., South Connellsville, Pa., general contract awarded the Austin Co., Cleveland; bars to be bought this week.

400 tons, new addition for Hotel Alms, Cincinnati; general contractor, Ferro Concrete Construction Co.

300 tons, school, Buffalo, N. Y.; pending.

300 tons, Pelham Court apartment, Philadelphia; pending.

250 tons, hotel for Easton, Pa.; pending.

225 tons, Alameda high school, Alameda, Cal.; bids in.

200 tons, road work in New York; to be awarded early in November.

160 tons, revised plans for warehouse for Chicago Civic Opera Co.; Graham, Anderson, Probst & White, 80 E. Jackson boulevard, Chicago, architects.

150 tons, Austin Y. M. C. A., Chicago; Berlin & Swern, 19 South La Salle street, Chicago, architects. Identical plans out soon for Englewood Y. M. C. A., Chicago.

105 tons, culverts, state highway commission, Montgomery, Ala.; bids in.

100 tons, Congregational church, Berkeley, Cal.; bids in.

Tonnage unstated, addition to Morrison hotel, Chicago; plans just issued by Holabird & Roche, 104 South Michigan avenue, Chicago.

Tonnage unstated, theater at Ashland avenue and West Seventy-ninth street, Chicago for Fitzpatrick & McElroy Co., 202 South State street, Chicago; plans by Newhouse & Bernham, 4623 Drexel boulevard, Chicago.

Tonnage unstated, contractors bids to be opened Nov. 26 on 163 miles of road work by the department of public works and buildings, division of highways, Springfield, Ill.; bids Nov. 12 and 26 on bridges.

Pipe Orders

Small But Aggregate Is Good—Electric Conduit Cut $6 A Ton

PIPE PRICES, PAGE 1133 AND 1194

Pittsburgh, Oct. 28—Miscellaneous pipe orders and specifications received by sellers from the irregular trade on standard full weight merchant pipe keep up well. While individually these orders cannot be called large, the aggregate is of sufficient magnitude to enable pipe makers to maintain a 65 to 70 per cent operating schedule. Today the largest producers of rigid electric conduit in the Mahoning valley inaugurated a 3-point reduction in price or $6 per ton.

Boiler tubes are weak as to price but increasing demand is bringing about more strength and makers expect that they shortly will be able to obtain prices more nearly in line with the published schedules.

Seasonal Influences Dull Market

New York, Oct. 28.—Seasonal influences continue to be felt in the local cast iron pipe market. While far from dull, trading is not as active as a month ago, and deliveries particularly on smaller sizes are easier. Prices continue unchanged, no downward move yet having developed.

A large oil company in the Philadelphia district is inquiring for 3400 tons of line pipe.

Private Buying Fair

Chicago, Oct. 28.—Advertised lettings of cast iron pipe continue to decline but private buying is fair and is partially neutralizing the decline. Detroit

opens bids this week on 2000 tons. Contractors' lettings about to be passed on to pipe makers include 400 tons at Roselle, Ill., 100 tons at Elmhurst, Ill., and 150 tons at La Grange Park, Ill. Pipe prices are not so firm and the quotation on 6-inch pipe and over is $49.20 to $50.20 delivered, Chicago, with the customary $4 differential for 4-inch pipe.

The Youngstown Sheet & Tube Co. announced effective today an increase of 3 points in the discount on rigid conduit pipe which is equivalent to a reduction of $6 a ton.

1500-ton Pipe Order Awarded

Birmingham, Ala., Oct. 27.—Few lettings are being reported by cast iron pipe producers of gas and water but present activity will continue through the balance of the year. Quotations are firm. Inquiries are being rereceived which show winter buying of pipe will be good. Shipments of cast iron pipe from the Birmingham district are steady. The Union Pacific railroad announced distribution of 1500 tons between the United States Cast Iron Pipe & Foundry Co., and National Cast iron pipe companies here.

38,000-Ton Project Planned

San Francisco, Oct. 25.—Pipe markets in this district are more active with awards in Long Beach, Cal., featuring recent business. That city awarded 2565 tons of 8 to 30-inch pipe to the United States Cast Iron Pipe & Foundry Co., and 275 tons, 16-inch to National Cast Iron Pipe Co. Several projects are pending in California involving approximately 1700 tons of pipe. After 16 months of investigation, the engineering board of the Eastbay Municipal Utilities district, on the east side of San Francisco bay, has recommended the Mokelumne project, which if passed by the voters on Nov. 4, and the bond issue approved, will involve 38,000 tons of 60 and 72-inch pipe.

Distributors of pipe in this district are slashing prices on out of stock material, and on smaller sizes from 10 to 15 per cent off is being named. Prices have dropped from $45 base of several weeks ago to $40 base, at Seattle.

CAST IRON PIPE PLACED

2665 tons, 8 to 30-inch class B pipe for Long Beach, Cal., to United States Cast Iron Pipe & Foundry Co.

1500 tons, Union Pacific railroad, to National Cast Iron Pipe Co. and United States Cast Iron Pipe & Foundry Co.

350 tons, Berkeley, Cal., to the National Cast Iron Pipe Co.

275 tons, of 16-inch class B pipe for Long Beach, Cal., to National Cast Iron Pipe Co.

CAST IRON PIPE PENDING

2000 tons 6-inch, Detroit; bids close Oct. 31.

1500 tons, First avenue south project, Seattle, Wash; general contract to J. L. Smith; 30-inch pipe.

750 tons, 5/16-inch plates for Seattle pipe line; bids in; Steel Tank & Pipe Co. low bidder for 30-inch line.

637 tons, 48 inch class A pipe for San Fernando Valley intercepting river, Glendale, Cal.; bids in.

580 tons, 4 to 14-inch class B pipe and 6, 8, and 10-inch deLavaud pipe for Lincoln, Cal.; bids in.

258 tons, 6, 8, and 10-inch pipe for Monrovia, Cal.; bids in.

250 tons, 48-inch pipe, 4150 lineal feet, for Santa Carbena irrigation district, Fresno, Cal.; bids Nov. 12; W. D. Harrington, resident engineer, Tracy, Cal.

110 tons, Santa Anna, Cal., 4 and 6-inch class B; bids opened.

Tonnage unstated, 12 miles of 4 and 8-inch pipe, Litchfield, Ill.; bids to be asked shortly.

Sheet Sales About Normal

Leading Makers in Pittsburgh in Good Position—Valley Bookings Maintain Operations Over 60 Per Cent—Price Ideas Firm

SHEET PRICES, PAGE 1133

Youngstown, O., Oct. 28.—Urgent shipments of sheet tonnage by some consumers has led one maker to expand his rolling schedule. Some producers have been cutting into their backlogs in excess of incoming business and have curtailed their operating rate. From a general standpoint, however, producers are booking sufficient business to maintain the district rate of operations above 60 per cent. While the majority of producers are avoiding the Chicago market in soliciting business a few are consigning tonnage to consumers there who have been customers of long standing. An attractive order of full pickled sheets recently was placed with a maker here by a western buyer at a price which predominates in this district. This grade is not manufactured in the Chicago territory. While Chicago makers are reported to have an attractive backlog, little tonnage from western buyers is being placed here. The majority of the tonnage coming off the mills here is being shipped into the eastern and southern markets. Buying by Detroit consumers is somewhat better. Specifications for all grades of sheets received late last week and the forepart of this by certain mills were gratifying. In other directions, however, buyers still are hesitant and mills find it difficult to determine rolling schedules a week in advance. While some producers recently were offering black tonnage at 3.40c and galvanized at 4.50c, there now is a tendency to tighten up. Some producers are quoting on the basis of either mill or delivered, or both according to conditions. Competitive quotations in the Pittsburgh district are being met by some makers here who are naming 2.60c to 2.70c on blue annealed, 3.40c to 3.50c on black and 4.50c to 4.60c on galvanized, Pittsburgh, but the majority of sales are made at the maximum figures.

Bookings Are Practically Normal

Pittsburgh, Oct. 28.—Some of the prominent sheetmakers in this vicinity report that bookings for the month to date are practically normal and represent almost average capacity. Others are booking considerably less than their capacity, encountering hesitancy everywhere and an inclination to defer buying. All sheetmakers are becoming keen watchers for business in their immediate localities. This is one of the immediate results of the abolishment of the Pittsburgh plus method of quoting prices, since to seek business at more distant points increases the necessity for freight absorption, with a reduction in profit. Sheet operations are in the neighborhood of 70 per cent of capacity, with the leading interest slightly less than that, about 68 per cent. Earlier in the month some large orders for blue annealed sheets were placed involving up to in excess of 7000 tons at a time and while the pending car business promises more orders of this character, only one order was received during the past week involving slightly more than 1000 tons. This seller is maintaining the 2.70c price on blue annealed sheets although a 2.60c price appears now and then in other directions. Additional galvanized sheets for car roofs have lately been ordered and more are scheduled for placing in the immediate future since the railroads are giving more and more attention to the repairing of their equipment as well as to replacements. From 4.60c to 4.70c represents the market on galvanized. No quotations below 3.40c f.o.b., Pittsburgh district mills, on black sheets have been current here, notwithstanding reports of a 3.35c price appearing in the East. Some makers will not go below 3.50c. Occasional orders for full-finished automobile sheets in lots of 1000 to 1500 tons at a time are being inquired for and occasionally placed, but this branch of steel consuming is on the wane. One inquiry is current for 1200 tons for January and February delivery but producers will not quote the present price of 4.60c beyond Dec. 31. Books are not yet opened for the first quarter. Intimations of price advances for that period are becoming more general.

Price Talk Is Firmer

Chicago, Oct. 28.—One maker of steel sheets believes that costs and the present general condition of the market warrant quotations better than 2.80c base Gary and Indiana Harbor, for blue annealed, 3.60c for black and 4.70c for galvanized, which is what western delivered prices figure back to. The sheet market today displays marked evidence of strength. Western consumers continue to display a desire to attach themselves to western sources of supply. Order books are lengthening, as a rule, and production in this district approximates capacity. Increased buying is attributed more to increased consumption than to stocking. Some buyers are cautious but election hesitancy is not so marked as in other finished lines.

Sales Unsatisfactory

Philadelphia, Oct. 28.—Sheet sales are not as good as desired, the volume averaging 60 to 70 per cent of mill capacity. Prices are fairly well maintained, with black sheets weakest. Black usually are 3.40c to 3.50c, base Pittsburgh, with occasionally 3.30c. Blue annealed sheets are firm at 2.60c, Pittsburgh, with small sales at 2.70c. Galvanized sheets generally are 4.60c, Pittsburgh, with some sales at 4.50c.

Ore Imports Are Heavier

Philadelphia, Oct. 28.—Imports at the port of Philadelphia for the week ending Oct. 25, included 7425 tons of iron ore from French Africa; 2000 tons of chrome ore from British South Africa; 300 tons of pig iron from England; 517 tons of shapes from Belgium; 15 tons of scrap steel from England; 10 tons of iron bars from Sweden and one ton of strip steel from Scotland.

Shape Awards Are Larger

Approximately 25,000 Tons Awarded in New York District and 20,000 Tons Being Sought—9000 Ton Subway Award Features Recent Lettings

STRUCTURAL SHAPE PRICES, PAGE 1133

New York, Oct. 28.—Fully 25,000 tons are included in the large structural awards in this district. The largest contract is a lot of 9000 tons for subway work in Philadelphia. Other work includes 3600 tons for the L. S. Plaut department store, Newark, N. J.; 3000 tons for the Knights of Columbus building, New York, and 1600 tons for a loft building at Twenty-first street and Broadway. While inquiry is fluctuating from week to week, a good average is being maintained. One fabricator reports about 20,000 tons of new inquiry, of which virtually two-thirds came out in the metropolitan district. The price situation, as applied to both plain material and fabricated shapes, still is rather spotty. Plain material is quoted at the equivalent of 1.80c to 2.00c, Pittsburgh.

Sales Smallest in Months

Philadelphia, Oct. 28.—Structural shape sales during the past week were the smallest in months due to the approach of the termination of the out door season. Hence mill operations are tending downwards. There are indications of quoting more mill prices in this territory but in all cases, these figure back to some Pittsburgh equivalent, which is as near as possible to the price Pittsburgh mills are quoting. The market here continues 1.80c to 1.90c, Pittsburgh, with some recent business going at $2 to $3 a ton less Current business is not of such character as to test the market.

Cancellations Begin To Appear

Buffalo, Oct. 28.—There is a tendency of contractors to defer construction until spring and there have been some cancellations of tentative orders for structural material and reinforcing bars. Buffalo fabricators have taken no lots of more than 85 tons for two weeks and report there is little new work on architects' boards.

Fair Sized Jobs Awarded

Pittsburgh, Oct. 28.—Inquiries are numerous involving structural shapes but awards are comparatively few. The only large tonnages placed this week are a building for Central Tube Co., 1500 tons, and one for the Childs restaurant Co., 600 tons. Several other smaller jobs have been placed. Plain material still is quoted at 1.90c to 2.00c, Pittsburgh with makers stressing the possibility of an early advance. One fabricator here reports small jobs in October exceeded those of September. September sales represented only 50 per cent of shipments, but this month sales equal 75 per cent of shipments.

Small Lot Transactions Rule

Cleveland, Oct. 28.—Activity in the local structural shape market was confined to small lot transactions during the past week. Large projects are being deferred until after the presidential election, with several good-sized lots expected to be active then. The price on plain material has a firmer tendency, with 2.19c, Cleveland, equivalent to 2.00c, Pittsburgh, being more uniformly quoted. On a project involving a fair tonnage in adjacent territory, one interest quoted 1.90c, Pittsburgh, while three or four other bidders each quoted 2.00c, Pittsburgh. The award of 600 tons for the Childs restaurant here to McClintic Marshall Co. was the only large tonnage placed this week, the steel being purchased in New York. Bethlehem Steel Co. has taken a contract for the initial tonnage of steel sheet piling required in the work on the Cleveland union station. Approximately 1000 tons, recently was inquired for. The total project, it is reported, will involve about 16,000 tons of sheet piling.

Improved Inquiry Is Noted

Cincinnati, Oct. 28.—Structural shape tonnage awards continue in moderate volume although an improved sentiment is noted in inquiries. Sellers report a number of orders from fabricators in adjoining cities involving small tonnages. Efforts on the part of fabricators to contract for material of late in this quarter fail to disclose any available tonnage under 2.00c, base Pittsburgh.

Bridgework Features Inquiry

Seattle, Oct. 25.—Structural activity in this district is well maintained, with 3000 tons of bridgework for the Alaska Northern railway as the feature of present inquiry. Several other bridge projects are expected to materialize in the spring.

Price Advance Is Rumored

Chicago, Oct. 28.—Although the range on plain material continues 2.00c to 2.10c, Chicago, at this time talk is all on the side of advance. One large maker is noncommittal as to its future price policy but affirms its conviction that the downward tendency has halted. The largest project in Chicago is the South Water street improvement involving, it is said, 15,000 tons for a new commission market and a like tonnage for the double-decking of South Water street. It is said that general contracts for both projects are near the point of being awarded. The largest award of the past week was 1913 tons of Great Northern bridge work which the Minneapolis Steel & Machinery Co. and the Wisconsin Bridge & Iron Co. shared.

Los Angeles Buying Active

San Francisco, Oct. 25.—Approximately 2000 tons of structural shapes was placed in this market during the past week, the largest award being 1500 tons for the Orpheum theater in Los Angeles, the contract going to Llewellyn Iron Works. More than 6600 tons of steel is involved in pending contracts.

STRUCTURAL CONTRACTS PLACED

Building awards this week	**33,242 tons**
Building awards last week	**19,520 tons**
Building awards two weeks ago	**18,184 tons**

9000 tons, second subway section, Philadelphia, to American Bridge Co.; Patrick McGovern, Inc., 50 East Forty-second street, New York, is general contractor.

3500 tons, first section of the L. S. Plaut department store, Newark, N. J., to Hedden Iron Construction Co. Starrett Bros., 103 Park avenue, New York, general contractors.

3000 tons, Knights of Columbus building, Eighth avenue and Fifty-first street, New York, to A. E. Norton; McEntee & Sperling, 103 Park avenue, general contractors.

1913 tons, Great Northern railroad bridgework, to Minneapolis Steel & Machinery Co. and Wisconsin Bridge & Iron Co.

1600 tons, loft, Twenty-first street and Broadway, to the Taylor Fichter Steel Construction Co.; Fredburn Construction Co., 31 Union Square, New York, general contractor.

1500 tons, building for the Central Tube Co., Economy, Pa., to the Jones & Laughlin Steel Corp.

1500 tons, Orpheum theatre building, Los Angeles, to Llewellyn Iron works.

1200 tons, apartment, 119th street, Morningside drive, New York, to the Drier Iron Works.

650 tons, powerhouse, Staten Island Edison Co., New York, to Belmont Iron Works. J. G. White Engineering Corp., general contractor.

630 tons, loft building, 18 East Fifty-third street, New York to Hedden Iron Construction Co.

600 tons, plant for the Continental Fibre Co., Philadelphia, at Newark, Del., to be fabricated by the Austin Co., engineer and builder.

600 tons, substation for the Brooklyn Edison Co., Brooklyn, N. Y., to the American Bridge Co., through Post & McCord, New York.

600 tons, Childs restaurant, Cleveland, to McClintic-Marshall Co. George B. Post, New York, architect.

535 tons, Burlington railroad bridge at Western avenue, Chicago, to the American Bridge Co.

500 tons, Franklin institute, New York, to Levering & Garrigues Co.

500 tons, George B. Post apartment, 2 East Sixty-third street, New York, to the Hinkle Iron Works.

450 tons, high school, Lynn, Mass., general contract to Cunningham, Lynn, Mass. Steel to independent fabricator, Boston.

400 tons, transmission towers, Los Angeles Gas & Electric Corp., from Seal Beach to Los Angeles, distance of 25 miles, to Pacific Coast Steel Co.

400 tons, loft building, West Thirtieth street, New York, placed through Henry H. Weitzner, 1457 Broadway, New York, to unnamed fabricator.

400 tons, building for the Capstan Glass Co., Connellsville, Pa., to be fabricated by the Austin Co., builder and engineer.

350 tons, high school, East Boston, general contract to A. Piotti Co. Steel to independent fabricator.

350 tons, crane runway in the foundry yard of the American Locomotive Co., Schenectady, N. Y., to the Lackawanna Bridge Co.

350 tons, garage, 207 West Seventy-sixth street, New York, to McClintic-Marshall Co.; Wm. J. Taylor Co., 342 Madison avenue, New York, is general contractor.

320 tons, chamber of commerce building, Greenville, S. C., to Carolina Steel & Iron Co.; Minter Homes Co., general contractor.

300 tons, Stanley theater, Atlantic City, N. J.; to New York Shipbuilding Co.

300 tons, Desopo office building, Hartford, Conn., to Levering & Garrigues Co.

250 tons, telephone exchange, Elmhurst, Long Island, N. Y., to Eidletz & Ross.

250 tons, buildings for the United States Cast Iron Pipe & Foundry Co., Scottdale, Pa., to the Blaw-Knox Co.

245 tons, sintering plant at Federal furnace, South Chicago, Ill., for American Ore Reclamation Co., to the Variety Iron & Steel Works.

200 tons, Childs restaurant, Fifth avenue, New York, to Communipaw Steel Co.

200 tons, hotel, Ashland, S. C., to Bethlehem Fabricators, Inc.

199 tons, five miscellaneous jobs in North Carolina, to Carolina Steel & Iron Co.

188 tons, deck plate girder spans for the Rock Island railroad, to the McClintic-Marshall Co.

175 tons, warehouse for the Townsend Co., New Brighton, Pa., to the McClintic-Marshall Co.

156 tons, crane runway and mill building for the Joslyn Mfg. & Supply Co., Chicago, to the South Halsted Street Iron Works.

150 tons, school building, Oakmont, Pa., to the John Eichleay Jr. Co.

122 tons, power plant for Illinois Northern Utilities Co., Dixon, Ill., to the Lakeside Bridge & Steel Co.

115 tons, mill building, Albany Milling Co., Boston, to West End Iron Works.

115 tons, additional steel for catenary structure for Illinois Central railroad electrification work in Chicago, to the Continental Bridge Co.

100 tons, manufacturing plant for the Findlay Clay Pot Co., Washington, Pa., to Fort Pitt Bridge Works, through Austin Co., engineer and builder.

100 tons, addition to Lewis Shepard Co. plant, Boston, to Palmer Steel Co.
100 tons, Chinese theater, San Francisco, to Western Iron Works.

STRUCTURAL CONTRACTS PENDING

5000 tons, auditorium for Tex Rickard, Eighth avenue between Forty-ninth and Fiftieth streets, New York; pending.
4000 tons, power plant at Piqua, O., for Columbus Railway, Power & Light Co., Columbus, O.; action postponed until spring. Detailed plans prepared by company engineers.
3600 tons, three bridges for Yosemite Valley railroad, California; bids by Merced Irrigation district, Merced, Cal., Nov. 18.
3000 tons, plates, 12 barges for the Mississippi River commission; Dravo Contracting Co., Pittsburgh, low bidder.
3000 tons, girders and trusses for Alaska railway; bids opened at Seattle, Nov. 3.
2000 tons, Bedell building Portland, Oreg.; bids in. Previously reported as involving 1100 tons.
2000 tons, buildings for the United States Cast Iron Pipe & Foundry Co., Burlington, N. J.; bids close this week.
1500 tons, plates, blast furnace in Pittsburgh district; details being arranged.
1000 tons, University of Pittsburgh athletic stadium; purchase deferred until spring.
1000 tons, service building, L. Bamberger, Newark, N. J.; pending.
800 tons, theater and office building, Youngstown, O.; Thomas W. Lamb, 644 Eighth avenue, New York, architect.
700 tons, loft building, 27 Twenty-eighth street, New York; pending.
526 tons, bridgework for Milan county, Tex.; bids in.
500 tons, federal buildings, Steubenville, O.; construction contract awarded the Murch Bros. Construction Co., St. Louis.
500 tons, Warren G. Harding high school, Warren, O.; bids close Nov. 10.
500 tons, miscellaneous work, approximately half of which is for a transmission tower in Cuba, to be purchased shortly by the Phoenix Utility Co., 65 Broadway, New York.
500 tons, cotton mill, Holyoke, Mass.; pending.
450 tons, J. Goldstein apartment, West Eighty-sixth street, New York; pending.
400 tons, school No. 19, Elizabeth, N. J.; pending.
300 tons, apartment, 1431 Lexington avenue, New York; pending.
300 tons, Kresge store buildings, New Brunswick and Elizabeth, N. J., pending.
250 tons, repairs for a New York Central bridge in Indiana; bids asked.
250 tons, for subway extension, Dorchester, Mass., for Boston Transit commission; bids close Nov. 11.
250 tons, theater, Eggleston Square, Boston; bids in.
200 tons, service station for International Harvester Co., Long Island City, N. Y.; bids asked, with alternates on concrete construction.
200 tons, Baltimore & Ohio railroad bridge in Maryland; bids asked.
180 tons, hotel, Ashland, Pa.; general contractor, Let & Tillotson.
130 tons, Colonial hotel addition, Cleveland; pending.
100 tons, theater, Summit, N. J.; pending.
Several hundred tons, Baptist church, 164th street, New York; E. E. Paul, 101 Park avenue, general contractor.
Several hundred tons, dry cleaning establishment, West 129th street, New York; Henry N. Witzner, 1457 Broadway, general contractor.
Several hundred tons, central storehouse, New York Telephone Co., Brooklyn, N. Y.; pending.
Tonnage unstated, Ohio hotel addition, Youngstown, O.; pending.

Alloys on Chicago Base

Chicago, Oct. 28.—A maker of alloy steel in the Chicago district states that these grades are now being quoted on a Chicago base which is $2 a ton higher than Pittsburgh. Quotations at Chicago are said to be 3.60c for chrome manganese steel, 3.75c for chrome nickel and chrome molybdenum steel, 4.85c for 3½ per cent nickel steel, 4.60c for chrome vanadium steel, 3.35c for ½ per cent nickel steel, and 4.10c to 4.35c for carbon vanadium steel.

Wages of more than 200 men employed by the Richmond Radiator Co., Uniontown, Pa., were cut 10 per cent Oct. 13.

Car Business Still Active

Norfolk & Western Seeks 3000 Gondolas—Mobile & Ohio Places 350 Cars—More Rails Placed—85 Locomotive Inquiries Active

RAILROAD TRACK MATERIAL PRICES, PAGE 1133

Chicago, Oct. 28.—Rail placements by western lines continue good although evidencing a slowing down from last week's pace. One maker has booked 30,000 tons in the past week. The Erie railroad is reported to have placed approximately 32,000 tons, of which the leading interest here took 6000 tons, the Inland Steel Co. and the Bethlehem Steel Co. split 7500 tons, with the Carnegie Steel Co. being awarded most of the remainder. The Chicago, Milwaukee & St. Paul railroad has placed some rail business with western makers. The Chesapeake & Ohio and the Missouri Pacific requirements are scheduled for placement this week.

Track fastening business is commensurate with rail business and the bookings of Chicago district makers of tie plates, angle bars, spikes and bolts last week ranged between 15,000 and 20,000 tons.

Car placements by the Great Northern and Mobile & Ohio railroads total 850, while the Burlington and Northern Pacific inquiries aggregate 1800 cars. The Chicago & Northwestern inquiry now is definitely before builders.

The maker of rolled steel wheels describes last week's business as the best in several months.

The Louisville railroad has placed an order with the Nashville Dillworth & Porter Co. for 13,000 kegs of standard railroad spikes for shipment over a period of six months.

Locomotive Inquiry Active

New York, Oct. 28.—The list of 3000 steel gondola cars under contemplation by the Norfolk & Western has materialized into an active inquiry. Other inquiry is restricted to rather small lists. A leading award is that of the Mobile & Ohio, which is understood to have placed 350 cars.

While active inquiry for locomotives is small, some substantial lists are under contemplation. The Wabash is understood to be preparing specifications for 50 locomotives, and the Missouri Pacific is planning to purchase 30. Current inquiries include three for the Great Northern.

Awards include five locomotives for the Mobile & Ohio, four going to the Lima Locomotive Works, Inc., and one to the Baldwin Locomotive Works, and one switch engine for the Clarendon & Pittsford, placed with the American Locomotive Co. This latter builder has received also an order for five locomotives from the Lehigh Valley.

More Small Orders Placed

Pittsburgh, Oct. 28.—Coal mining is on the increase and this has been reflected in bookings of light rail orders. Individual tonnages booked by rail mills have been small. A large order called for 150 tons, the usual one being for a single carload. More light rails have been booked by one or two sellers in October than in September and August combined and specifications on contracts likewise have been heavier. Prices are unchanged at 1.80c to 1.85c.

Track fastening orders are not numerous, most buying being for prompt needs only. The Pennsylvania railroad and other carriers are filling their needs as they arise. The Baltimore & Ohio has furnished shipping instructions on 400 kegs of spikes on a contract placed some time ago for 5000 kegs. Prices are unchanged on the quoted bases.

The Altoona, Pa. shops of the Pennsylvania railroad on Oct. 25 received an order for 50 class C-1 engines for switching service, and class G-5-8 engines for passenger service.

CAR ORDERS PLACED

Buffalo Creek & Gauley, repairs to 150 hopper cars, to Pressed Steel Car Co.
General Sugar Co., Havana, Cuba, 12 cane cars, to the Magor Car Corp.
Great Northern railroad, 500 stock car bodies, to the Siems-Stemble Co.
Hutchins Car Roofing Co., 900 tons of car ends, to the General-American Tank Car Corp.
Interborough Rapid Transit Co., New York, 150 subway cars, to the American Car & Foundry Co.
Lehigh Valley railroad, 5 coaches and 2 diners, to the Pullman Car & Mfg. Corp.
Missouri Pacific railroad, 300 gondola repairs, to General American Car Corp.
Mobile & Ohio, 350 cars, 200 composite gondolas to General American Car Co., and 150 composite hoppers to Kilby Car & Foundry Co.
Rock Island railroad, repairs to 146 cars, to the Western Steel Car Co.

CAR ORDERS PENDING

Chicago, Burlington & Quincy railroad, 1000 gondola bodies; pending.
Delaware, Lackawanna & Western, 30 Express cars; contemplated.
Long Island, 15 caboose cars; pending.
Norfolk & Western, 3000 gondola cars; specifications out.
Northern Pacific railroad, 800 gondolas, 10 passenger coaches, 5 baggage cars and 5 mail and express cars; pending.
Southern railway, 1000 steel semiconstruction cars; pending.
South Indian Railway Co., 20 tank cars; pending.
Standard Oil Co. of Brazil, 10 tank cars, pending.

Tin Plate Inquiry

Pending for 500,000 Boxes, for Exports. Large Orders Expected Soon

TIN PLATE PRICES, PAGE 1133

New York, Oct. 28.—Inquiries for about 500,000 boxes of tin plate are pending, for export either direct or indirect. The Standard Oil Co. of New Jersey is inquiring for 300,000 boxes, while the Standard Oil Co. of New York also is obtaining prices on a substantial tonnage.

Substantial Orders Expected

Pittsburgh, Oct. 28.—Within the next two or three weeks, it is expected substantial oredrs for tin plate will be placed. Some of the orders will not develop until books of makers are opened for the first quarter. As it looks now, prices will not be changed: $5.50 per base box of 100 pounds, f.o.b. Pittsburgh district mills; and $3.60 at Gary, Ind., equivalent to $5.65 at Chicago. It is possible, however, that some of the western consumers will have to pay higher figures later when the western mills get filled up and they have to come to Pittsburgh and other mills for their needs.

Nonferrous Metal Markets

Prices of the Week

	Copper			Spot		Lead					
	Electro delivered	Lake delivered	Casting refinery	Tin, N. Y. Straits	New York Lead	St. Louis East	St. Louis Zinc	Aluminum 98-99%	Antimony Spot	Nickel Ingot
Oct. 22	13.25	13.37½	12.75	51.62½	8.50	8.12½	6.40	27.00	11.75	29.00
Oct. 23	13.25	13.37½	12.75	51.87½	8.62½	8.25	6.40	27.00	11.75	29.00
Oct. 24	13.30	13.50	12.87½	52.25	9.00	8.60	6.42½	27.00	11.75	29.00
Oct. 27	13.50	13.62½	13.00	52.00	9.12½	8.87½	6.50	27.00	11.75	29.00
Oct. 28	13.60	13.62½	13.00	51.75	9.12½	8.87½	6.50	27.00	11.75	29.00

NEW YORK, Oct. 28.—American consumers of copper, lead and zinc bought heavily in the past week on the rising tide of prices here and abroad. Strength has been manifest throughout the list of metals and metal products and advances in quotations have been made all along the line. Improved domestic business conditions in combination with the steady gains in European consumption have combined to put the metal markets in a more bullish position than at any time since March. In the period since Oct. 1 tin prices in London advanced £18 a ton; in New York, 4 cents a pound; copper has advanced £2 in London and ⅝ cents in New York; lead has advanced £5 in London and 1 cent in New York; zinc has advanced £2 10s in London and ⅜ cent in New York. Antimony has advanced ¾ cent. No change has been announced in aluminum, but this market is strong and world prices have shown an upward tendency. The metal markets in general reflect a condition of low to moderate stocks in the hands of producers and consumers, which means their position enables a quick response to any substantial buying, especially as prices have been low in most lines.

Copper—Large sales of electrolytic copper have been made this month, putting producers in a position as to bookings such that they are disposed to sell only limited tonnages on the rise and then they peg their prices higher. From Friday to Monday copper prices advanced ¼ cent to 13.50c, Connecticut, 13.62½c Middle West, for prompt to December, inclusive, with one-eighth cent premium asked for January. Export buying has been on a large scale, with Germany and France leading, but with some business also done for British and Italian account.

Wire—The American Brass Co. advanced wire base prices ½ cent Oct. 27. This brought the published base for bare copper wire to 15.62½c. Open market prices for wire also are higher, 15.25c to 15.37½c; weatherproof 16.75c to 17c. Wire business has been heavy.

Brass and copper rolled products—The American Brass Co. advanced base prices of copper and brass rolled products ¼ cent Oct. 27 and similar advances were adopted by independent mills. These advances were in line with the higher cost of electrolytic copper and are based on 13.50c ingot. Buying of products has increased on the advancing copper market.

Zinc—An exceptionally large business in prime western slab zinc was done in the past week for both foreign and domestic account. Export sales in October probably will approximate 10,000 tons.

Prices Higher and Buying More Active in Nearly All Lines of Metals

Germany, as well as England, has been a buyer. Domestic galvanizers have bought freely for November and December shipment.

Lead—The American Smelting & Refining Co. has announced four price advances, aggregating $13 a ton, in the week between Oct. 20 and 27. Its official contract price Oct. 27, was 8.65c, New York. On the same day, however, open market business was being done on the basis of 9c New York, and some middlewestern sellers asked 9c East St. Louis. The entire world lead market shows an extremely strong upward tendency.

Tin—Tin prices advanced more than a cent a pound the past week, as a result of the continuance of bull operations by important factors in the London market, but today the market eased. American consumers have bought sparingly, but important professional buying interest has appeared in the New York market.

Antimony—Some business has been done by consumers with importers in spot antimony this week on the basis of 11.75c duty paid.

Aluminum—No change is reported in prices for virgin ingot aluminum or aluminum scrap. Practically no foreign ingot now is being offered for sale in this country by importers and Europe is consuming its entire output. Virgin ingot, 98 to 99 per cent, continues quoted 27c; 99 per cent, 28 cents.

Old metals—Dealers are not marking their buying prices up as rapidly as new metals, for fear the latter will not be stable. Buying has been stimulated but lags behind new metals.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled	20.62½
High brass	17.37½
Zinc, ga. 9 to 18 (plates ½c less)	10.25
Lead, full sheets (cut ¼c more)	12.00
Aluminum, bright, 0 to 35 gage	37.50 to 92.00
SEAMLESS TUBES	
High brass	21.75
Copper	23.00
RODS	
High brass, round, ¾ to 2½-inch	15.12½
Naval brass rods	17.87½
WIRE	
Copper	15.25 to 15.62½
High brass	17.87½

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
New York	8.25
Chicago	8.50
Cleveland	8.75 to 9.00
HEAVY YELLOW BRASS	
New York	6.50 to 6.75
Chicago	7.00
Cleveland	6.50
ZINC	
New York	3.50 to 3.75
Chicago, dross	4.50
Cleveland	3.50 to 3.75
HEAVY COPPER AND WIRE	
New York	10.75
Chicago	10.75
Cleveland	11.00
RED BRASS TURNINGS	
New York	7.25 to 7.50
Chicago	8.25
Cleveland	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	6.50
NO. 1 BRASS ROD TURNINGS	
New York	7.00 to 7.25
Chicago	7.00 to 7.25
Cleveland	6.75 to 7.00
LIGHT COPPER	
New York	9.00 to 9.25
Chicago	9.00 to 9.25
Cleveland	9.00 to 9.25
LIGHT BRASS	
Chicago	6.25
Clippings, Chicago	8.25 to 8.85
ALUMINUM	
Borings, Cleveland	11.00
Old sheet, Cleveland	16.50 to 17.00
Clippings, Cleveland	20.00

Secondary Metals

Remelt aluminum No. 12	21.50 to 22.00
Brass ingot 85-5-5-5	11.50

Puddling Rate Is Reduced 25 Cents Per Ton

Puddlers wages in mills of the Western Bar Iron association will be $11.88 per ton during November and December. This is a reduction of 25 cents a ton from the rate of $12.13 a ton in September and October. The average sales price of bar iron during the last two months was $2.10 per 100 pounds, compared with $2.15 in the preceding two months. Puddling rates for the succeeding two months are based on sales averages. The examination of sales sheets was made at Youngstown Tuesday by representatives of the bar iron association and the Amalgamated Association of Iron, Steel and Tin Workers. The following is a comparison of average sales prices during the last four years:

	1924	1923	1922	1921	1920
Jan.-Feb.	2.35c	2.25c	1.60c	2.80c	2.55c
Mar.-April	2.35c	2.35c	1.50c	2.35c	2.70c
May-June	2.25c	2.50c	1.60c	2.30c	3.00c
July-Aug.	2.15c	2.50c	1.70c	1.85c	3.25c
July-Aug.	2.15c	2.50c	1.70c	1.85c	3.25c
Sept.-Oct.	2.10c	3.40c	1.95c	1.70c	3.40c
Nov.-Dec.	.....	2.35c	2.20c	1.65c	3.55c
Yearly av.	.....	2.30c	1.76c	2.14c	3.08c

The report of earnings for the Gulf States Steel Co., Birmingham, Ala., for the quarter ended Sept. 30 shows profits of $176,487 compared with $336,747 in the corresponding period of 1923.

Sulphate Steady

Output Shows Substantial Increase—Trading in Distillates Active

New York, Oct. 28.—Trading in sulphate of ammonia is spotty. However, quotations on material for domestic account are unchanged at $2.65 works. This steadiness in the face of current light buying is attributed to heavy contracts made sometime ago, against which production must be applied. Output as a whole over the last few weeks has improved substantially, however, sellers in making their commitments discounted to a certain extent this increase, with the result that supplies at this time are showing little gain. Foreign demand remains at a standstill, with prices purely nominal. It appears doubtful that export business, should it develop, could be placed at much under $2.90 to $3, seaboard, in double bags.

Quotations on light oil distillates are unchanged. Pure benzol may be quoted at 25 cents producers works in tank lots and 30 cents in drums; 90 per cent, 23 cents in tanks and 28 cents in drums; toluol, 26 cents in tanks and 31 cents in drums; solvent naphtha, 25 cents in tanks and 30 cents in drums; and commercial xylol, 26 cents in tanks and 31 cents in drums. Trading is fairly active with supplies scarce in the leading grades.

Naphthalene in carload lots for nearby shipment is steady at 6 cents works for flakes and 7 cents for balls. Contract business is going at about ¼ to ⅛ cent higher, with trading extending slightly. The market on less than carload lots for nearby shipment is 6½ cents works for flakes and 7½ cents for balls.

Demand for phenol is of routine character with spot supplies going at 27 cents local warehouse, and future business at 25 cents works.

Coke Oven By-Product

Spot*	
Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.25
Toluol	0.26
Solvent naphtha	0.25
Commercial xylol	0.26
Per Pound at Producers' Plants	
Phenol	0.27
Naphthalene flake	0.06
Naphthalene balls	0 07
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.65
Contract	
Pure benzol	Nominal
Toluol	Nominal
Solvent naphtha	Nominal
Commercial xylol	Nominal
Per Pound at Producers' Plants	
Phenol	$0.25
Naphthalene flakes	Nominal
Naphthalene balls	Nominal

*Spot distillates are subject to shading.

Mild Interest in Scrap

(*Concluded from Page* 1134)

crease, and some country scrap is coming out. There is a fair demand for heavy melting steel and borings and turnings. The situation is far from encouraging from the dealers' viewpoint.

Dull Trade at Cleveland

Cleveland, Oct. 28.—Scrap trading continues unusually light, dealers affording practically the only activity. Consumers remain out of the market and their purchases are the lightest in a year. Prices are unchanged but largely nominal.

Detroit Market Quiet

Detroit, Oct. 25.—Iron and steel scrap continues steady at recent declines. Mills are out of the market and show no inclination to take supplies. Producers are offering large tonnages but sales are light.

More Interest In West

St. Louis, Oct. 27.—The chief point of interest in iron and steel scrap has been a revival of interest and more optimism on the part of dealers. The near approach of the election and growing belief that the result will be favorable to business, is arousing speculative activity. There is a greater disposition by dealers to take on scrap, and railroad lists have elicited lively bidding. Quoted prices have undergone no change worthy of mention, but holders are somewhat firmer in their views and are less inclined to accept offers than a few weeks back.

Consumers continue to mark time. There continues a fair car-lot movement, but virtually no contracting. One exception was the purchase of a round tonnage of rolling mill material by the Keystone Steel & Wire Co., of Peoria. Demand for cast grades is a shade better, from with stove and implement makers. Malleable interests are booking additional new business and are buying some scrap to fill in.

Reports from Chicago and points further east reflect more interest generally than ten days or two weeks ago, with prices firmer. Considerable scrap is coming into sight. Railroad lists include the following: New Orleans & Great Northern, 100 tons; St. Louis & San Francisco, 3000 tons; Canadian National, 500 tons of relayers; Chicago Burlington & Quincy, 6500 tons. The Standard Oil Co. offers 200 tons from its Woodriver refinery, and Dodge Brothers have 4000 tons to sell.

Market Continues Dull

Birmingham, Ala., Oct. 27.—No improvement is noted in iron and steel scrap and quotations have not changed. Heavy melting steel is held at $12 but there is little buying, as is the case with No. 1 cast and stove plate. Some old material continues moving on old contracts.

Philadelphia Markets Active

Philadelphia, Oct. 28.—Iron and steel scrap markets in this district are more active. Two eastern mills have bought substantial tonnages of steel scrap. Others have purchased scattered tonnages. Heavy melting steel scrap prices now are tending toward a higher level, quotations being $16.50 to $17.50, delivered, with substantial sales going at $17.50. Some activity in turnings and chemical borings and miscellaneous grades is noted.

A net profit of $476,388 is reported by the Midland Steel Products Co. for the quarter ended Sept. 30 after interest, depreciation, Federal taxes, etc., against $372,465 for the preceding quarter.

Terne Plate Schedule Is Approved

At the recent conference of the terne plate simplification committee of the metal branch of the National Hardware association at Atlantic City, N J., the elimination of 12 and 35 pound coatings representing a reduction of approximately 21 per cent in the number of kinds of terne plate was recommended and approved. Final action, however, will be taken at a meeting to be called by the department of commerce to which manufacturers, distributors and consumers will be invited. The terne plate simplification committee of the metal branch of the National Hardware association includes H. N. Taylor, N. & G. Taylor Co., Philadelphia, chairman; F. H. McNeive, W. F. Potts Son & Co., Philadelphia; and L. D. Brueckel, Weirton Steel Co., Weirton, W. Va.

Will Install New Mill

Chicago, Oct. 28.—Expansion plans of the Wisconsin Steel Co. subsidiary of the International Harvester Co., are progressing as depicted by the placing of 820 tons of structural steel for a new blooming mill and billet yard crane runway and the awarding of five cranes. The steel went to the American Bridge Co. and the cranes as follows: One 75-ton and one 50-ton traveling crane to the Morgan Engineering Co., one 30-ton traveling crane to the Cleveland Crane & Engineering Co. and one 10-ton traveling crane to the Whiting Corp. Further details of enlargement of the plant in South Chicago now are under consideration. Last fall five 100-ton open-hearth furnaces were completed.

Pneumatic Tool Net Less

Net profit of $132,495 for the quarter ended Sept. 30 and net profit of $446,641 for the nine month's period are reported by the Chicago Pneumatic Tool Co., the figure in each case being after depreciation, federal taxes and interest charges. Thus net compared with $644,857 for the first nine months of last year. The net for the third quarter amounted to $132,495 against $218,140 the year before.

Ore Docks Are Burned

Escanaba, Mich., Oct. 27.—Fire destroyed two ore docks of the Chicago & Northwestern railroad here Oct. 23, with a loss estimated at $1,250,000. The docks will be rebuilt. The flames spread to the dock of the Reiss Coal Co., where considerable damage also resulted.

British Market Gains Strength

Idle Blast Furnaces and Armor Plate Mills Restarted—Sales of Pig Iron Made for Delivery to United States—Germans Sell 8500 Tons of Rails to Sweden—Reparations Coke Reduced in France

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Oct. 28.—More firmness is noted in the British iron and steel markets this week. Idle blast furnaces in Sheffield have been restarted. Armor plate mills that have been down for some weeks are operating again. A Sheffield firm has booked an order for a 5-mile pipe line for India. Purchases of pig iron for delivery to the United States are a feature of the week's business.

Belgium mills are underselling British interests on beams to the extent of £2 ($9), and also on billets, as much as £1 10s ($6.75). Good buying of tin plate is reported on the Continent.

A report from Paris states that reparations coke has been reduced 7 francs ($0.36). An order for a tonnage of rails for Manchuria has been divided between the Micheville and DeWendel mills.

Berlin reports the sale of 8500 tons of rails by German mills to Sweden, a quantity of railroad material to the Balkans, and also a tonnage of wire products to South Africa.

Continent Cuts British Steel Prices Deeply

European Staff Special

LONDON, Oct. 17.—The situation in the British market is somewhat more promising. Demand for material for export has slightly improved since the beginning of the month and inquiries are coming from practically all foreign markets, especially the colonies. Much inquiry has been received from India but the prices offered are too low to render business attractive. Only a few orders result from all these requests and competition against continental material is as bitter as ever. The political crisis which has resulted in the dissolution of Parliament and a new election is regretted in industrial circles, since such events have a disturbing effect on the market which is striving to regain a firmer position.

Practically all steel rail business goes to the Continent and an interesting order for 100-pound rails has been captured by continental mills, the price reported being £5 17s 6d ($26.25) f.o.b. However, this price has not been confirmed. The French are reported to have sold railroad rails to Japan at £5 19s ($26.55) and Germany has also quoted £6 3s ($27.50). On the other hand the Germans have underbid by 10 per cent a French firm who offered rails at 525 francs ($27.25). The figures tend to indicate that the rail market is governed by German and French prices. German wire rods have been quoted at £6 5s per metric ton (1.28c per pound) f.o.b. The Germans are also reported to have offered wire rods at $37 per ton (1.68c) c.i.f. Montreal.

Prices of semifinished steel are still falling off and continental billets are said to have been offered as low as £5 2s per metric ton ($22.80) f.o.b. Antwerp. French semifinished steel is offered at equivalent quotations and it is impossible for British producers to compete against such low prices, even in the home market, since Belgian billets can be bought at Birmingham between £6 and £6 5s ($26.95 and $28.10) whereas the British price is £6 15s ($30.25). In pig iron the situation is much the same. French pig iron is quoted at 300 francs ($15.30)

Sterling—$4.48

per metric ton f.o.b. Antwerp for export, whereas British pig iron of the same grade is quoted on the domestic market at £4 2s ($18.40). Weakness of pig iron in Great Britain is further indicated by the fact that three hematite furnaces have been blown out in the north of England. The British minister of mines stated that 260 coal mines have been closed since the beginning of the year and not been reopened while 118 had been either opened or reopened during the same period.

Continental beams have been offered in the Middlesbrough district at £6 17s 6d per metric ton (1.40c) delivered, the domestic price for beams in England being £8 15s (1.75c). However, British purchases of foreign steel are comparatively small as demand is somewhat reduced and buyers who are still expecting lower prices are taking care of only their immediate requirements. The same conditions apply to the nut and bolt iron department, continental material being obtainable at £7 15s (1.58c).

Among recent contracts obtained by British firms are 12 locomotives for the Buenos Aires and Pacific railways which have been awarded to Armstrong-Whitworth. It is to be noted the above mentioned railway company is British. The railroad board of India has ordered 2300 railway cars and a number of locomotives in Great Britain. South African railroads have ordered 22 locomotives in England and 72 on the Continent. Armstrong-Whitworth is also on the point of starting construction of 30 locomotives for the government of South Australia. These locomotives are said to be the largest built in Great Britain.

In Belgium a general decline of iron and steel prices has again been noted since offers from Foreign buyers are generally under average quotations and a number of concerns are in need of orders. However, it seems that prices can hardly drop much further if any profits are to be made. Inquiries have been received in Belgium from Ireland for boiler works material and structural steel. South Africa is also inquiring for fencing wire and a slight revival of demand from Japan for light gage sheets has also been reported.

In ferromanganese the French market is more or less in the hands of British and Norwegian producers and French producers are now claiming the tariff on this product should be raised in order to protect the French market. Norwegian ferromanganese is offered at 1250 francs ($65) and British ferromanganese at 1325 francs ($69), whereas the French price still remains at 1400 francs ($72.80). Luxemburg is also keenly competing on the French market in the steel department, this competition being also extended to export markets; it is reported that the Luxemburg export company Columeta has sold 7000 tons of bars and shapes through its London office.

German Imports Lowest in Three Years

European Staff Special

London, Oct. 17.—Germany's exports of iron and steel products amounted to 146,491 metric tons in August, compared with 116,529 tons in July, 107,260 tons in June and 118,405 tons in January. German exports for August show an increase of 29,962 tons over the preceding month, and are only 538 tons below the figures for February when exports were as high as 147,029 tons. Exports for August were 13,702 tons above the figure for the corresponding month in 1923. Among the principal items exported in August were 30,584 tons of scrap, 19,988 tons of plates and sheets, 14,853 tons of bars and bands, and 12,129 tons of rolled and drawn wire. Only 2994 tons of pig iron was exported during the month of August.

The Business Trend

October 30, 1924

BY JOHN W. HILL, FINANCIAL EDITOR

ON THE eve of election some surface hesitation is discernible in enterprise. Underneath, however, where the deeper waters run, favorable forces are fomenting. They present an outlook for the broadest and most substantial industrial recovery since the war.

These forces are four in number and they include, (1) reviving agricultural prosperity; (2) an abundance of liquid capital and credit; (3) the whittled-down condition of manufactured stocks; and (4) prospects of economic restoration of Europe.

Industry's efforts to maintain activities at a sustained level in recent years have been defeated by two overpowering obstacles. One has been the limited purchasing power both of the farmer—the country's largest single group of domestic consumers—and of Europe—the country's largest single export market.

A close economic relationship exists between Europe and the American farmer. High prices for wheat have resulted from the world crop failure outside of the United States. This has increased Europe's need while her greater financial stability is enabling her to buy.

Wheat Purchases Large

European wheat purchases have approached the spectacular. Weekly wheat exports in October are averaging 9,000,000 bushels weekly. This forecasts a month's total higher than any other October on record.

The abundance of credit is indicated by the fact that commercial paper rates this autumn are the lowest for the season, with one exception, since 1897. This does not reflect a lack of demand for credit, because commercial loans of 750 member banks have increased over $350,000,000 from the summer's low point. It reflects large reserves due to gold imports.

Car Loadings Large

Car loadings totals reached a new high record for 1924 for the week ended Oct. 11. Traffic is running at about the levels attained in the fall of 1923. Retail trade made more than the usual gain in September, the governmnt reports.

Recent warm weather has held back retail trade in some centers but it has helped to save much more of the corn crops from frost than was thought possible a few weeks ago.

Recent earnings reports of independent steel companies are doleful reminders of the summer's depression. The current quarter may also show meagre earnings due partly to unsettlements incident to the new basing plan.

But in the past the initial stages of recovery in the steel industry have nearly always shown dragging prices and earnings for some months after activities start upward. This is due to keen competition and inability to promptly get prices upon a profitable basis.

The Barometer of Business

Weekly Comparison

	Last week	Week before	One mo. ago	One year ago	1913
Business failures ..	347	326	285	387	...
Cash ratio Fed. Res. System %..	79.2	77.1	80.4	76.8	...
Loan Rate, 4-6 mos. N. Y. %..	3-3¼	3-3¼	3-3¼	5¼	5½
Aver. price 25 industrial shares ..	$117.30	$116.70	$118.65	$101.78	$58.19
Aver. price 25 railroad shares	$70.27	$69.28	$71.09	$57.06	$82.97
Av. price 40 bonds	$81.13	$80.94	$81.42	$76.08	$93.00
Car loadings week ended Oct. 11..	1,088,462	1,077,006	1,061,424	1,085,938	†1,018,539
Bank Debits 246 cities (000 omitted)	$10,768,238	$9,401,674	$9,630,086	$9,185,949	.....

†1920

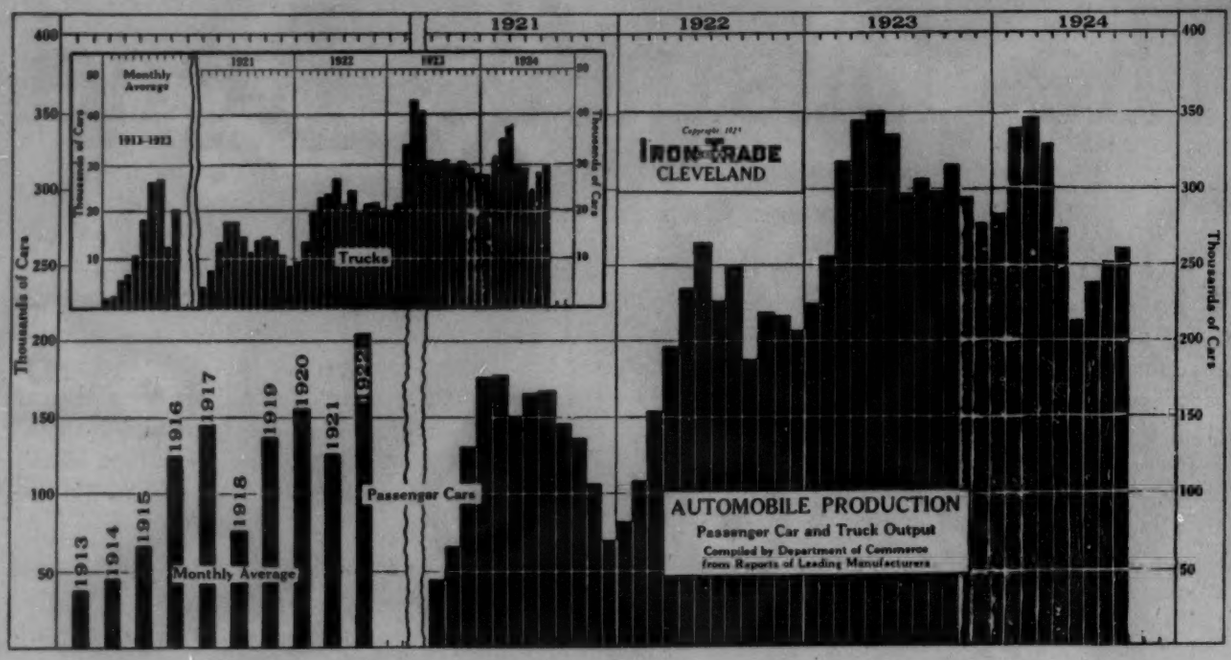
Foreign Exchange (Demand)

	Normal	Last week close	One week before	One month ago	One year ago
Sterling	$4.86	$4.49	$4.48	$4.46	$4.49
Francs	19.3c	5.21c	5.22c	5.25c	5.91c
Lira	19.3c	4.32c	4.36c	4.38c	4.52c

Monthly Comparison

Dodge Building awards in 27 states (sq. ft.)	Sept. 43,452,700	One Month before 41,852,000	One Year ago 39,391,200	1913 Mo. average 31,250,000
Business failures:				
Number	1,306	1,520	1,226	1,336
Liabilities ..	$34,296,276	$55,153,981	$28,698,649	$22,732,000
Exports	$427,000,000	$331,600,000	$381,400,000	$233,195,000
Excess of gold imports	$1,975,840	$15,752,524	$26,941,264	††$630,716
Bureau of labor price index..	148.8	149.7	153.7	100
Bradstreet's price index	140.6	138.6	141.6	100
Economist's British price index	174	170.2	157.7	100
Nat'l Industrial Con. board living cost index	*161.7	161.7	161.9	‡100
New incorporations	$478,680,000	$398,950,080	$500,830,000	$49,301,000
Railroad net earnings	*$95,415,300	$75,027,000	$98,934,000	$59,301,000

††Excess of gold exports. ‡July, 1914. *August.

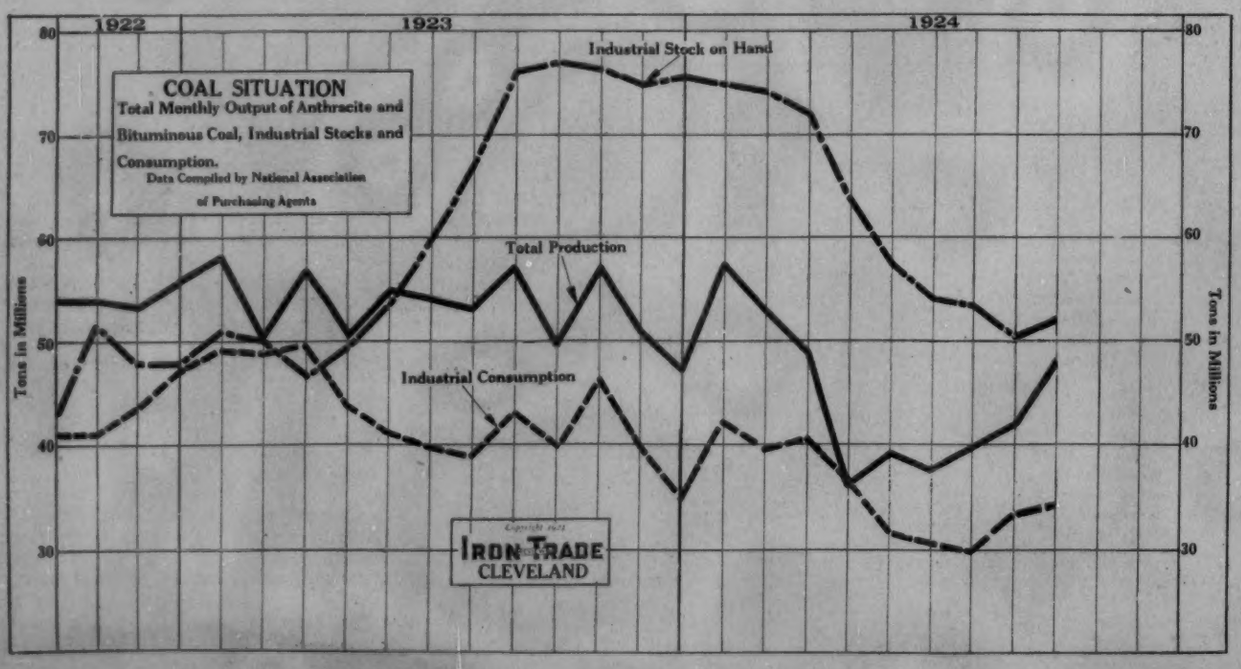


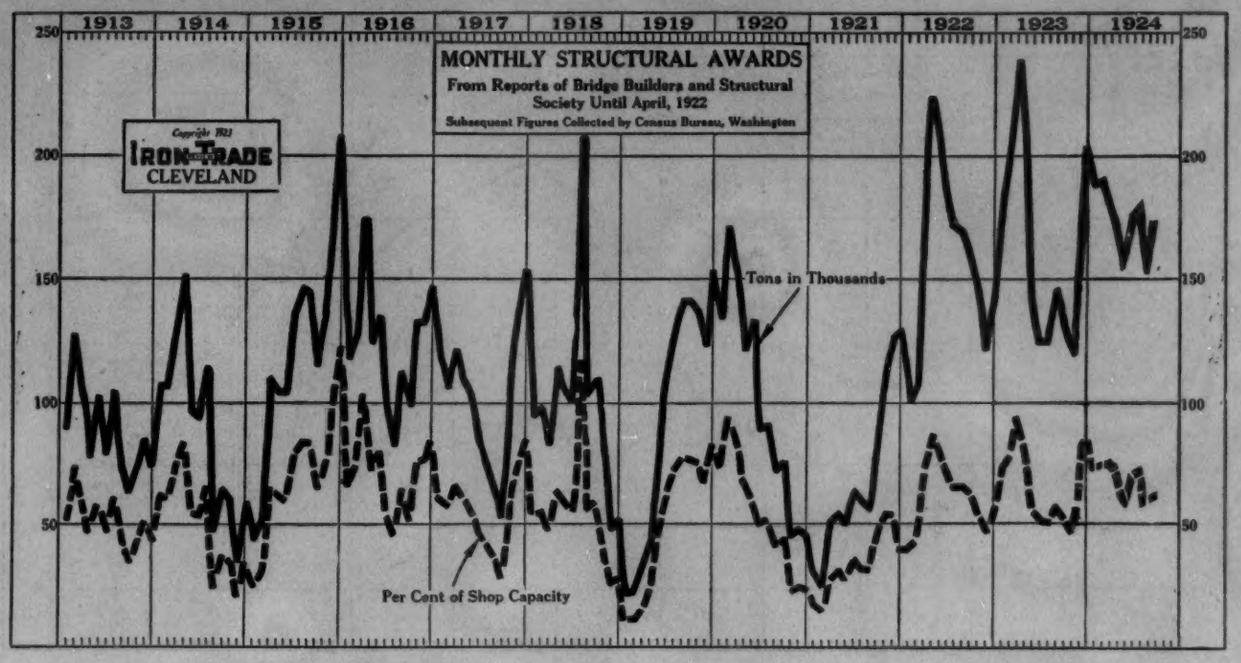
Automobile Output

SEPTEMBER brought an output of 288,008 passenger cars and trucks. This was a gain of 4 per cent over the August total and of 13 per cent over that for July. Compared with the production of 344,000 cars and trucks in September, 1923, there was a reduction of 15 per cent. Passenger car production increased 3 per cent in September and truck production increased 9 per cent. In the first nine months of 1924 the output of cars and trucks was 2,827,900 against 3,031,000 in the same period of 1923, a reduction of 6 per cent.

Coal Situation

INDUSTRIAL activity, measured by the consumption of coal, increased in September. The National Association of Purchasing Agents estimates that 800,000 tons more of coal were used last month than in August. This compared with a gain in August of 4,000,000 tons over the July total. Production for the month was 48,418,000 tons, of which 40,879,000 tons were soft coal. The increase of soft coal output was 5,655,000 tons. Industrial stocks gained by 1,143,000, making the total sufficient for 45 days' use.



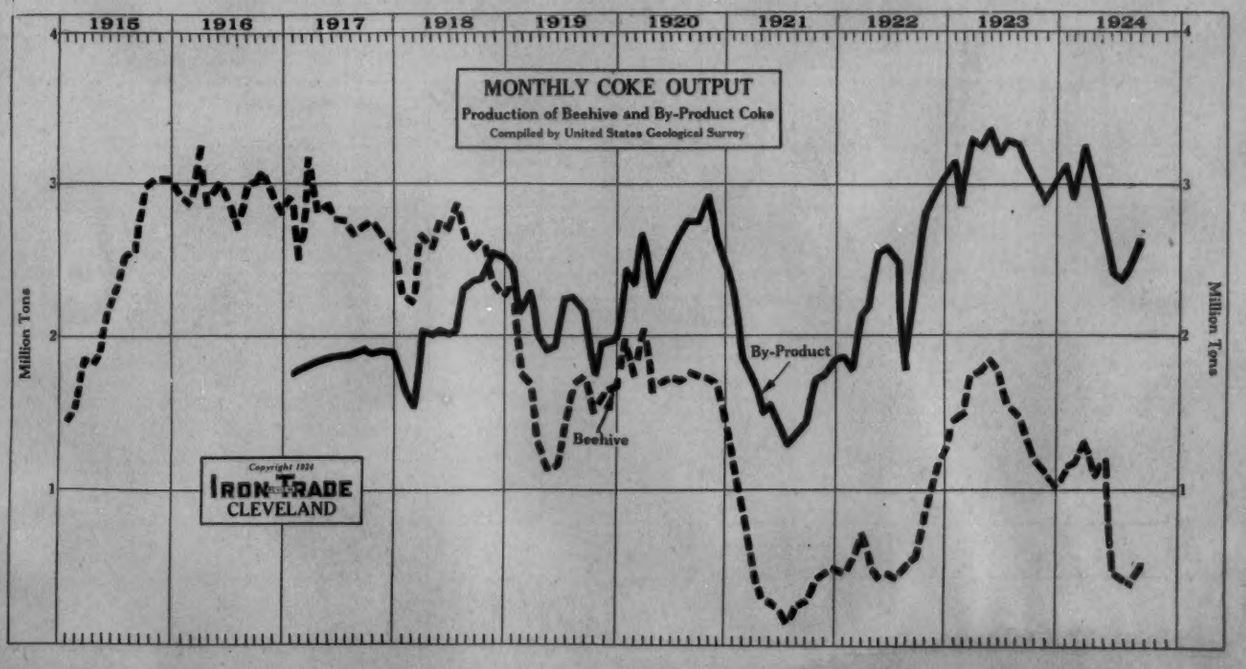


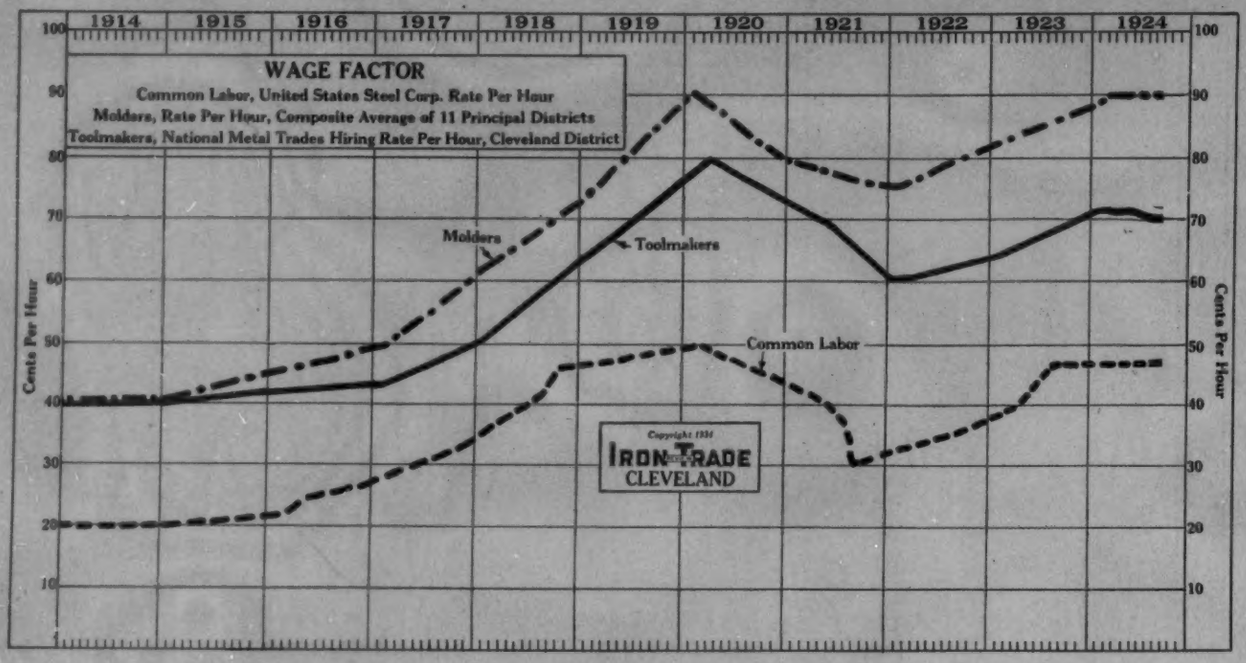
Structural Awards

STRUCTURAL steel business came back in September as one of the strong spots in the steel market. Estimated total bookings of structural shapes last month amounted to 174,200 tons, a gain of 18,200 tons over the August level. The month's record was 29 per cent greater than the total of 135,200 tons reported for September, 1923. Operations were at 67 per cent in September as compared with 60 per cent in August and 52 per cent in September, 1923. Shipments of 197,600 tons last month gained 10,400 tons over August.

Coke Production

THE coke industry has responded to improvement for pig iron. In September there were gains in output for both by-product and for beehive coke. The production of by-product coke amounted to 2,543,000 tons compared with 2,445,000 tons in August, a gain of 8 per cent. Of the 75 plants now in existence 68 were active. The output of beehive coke is estimated at 523,000 tons, an increase of 89,000 tons over the August total. Aggregate coke production was 8 per cent above the July level but 33 per cent below that of September, 1923.



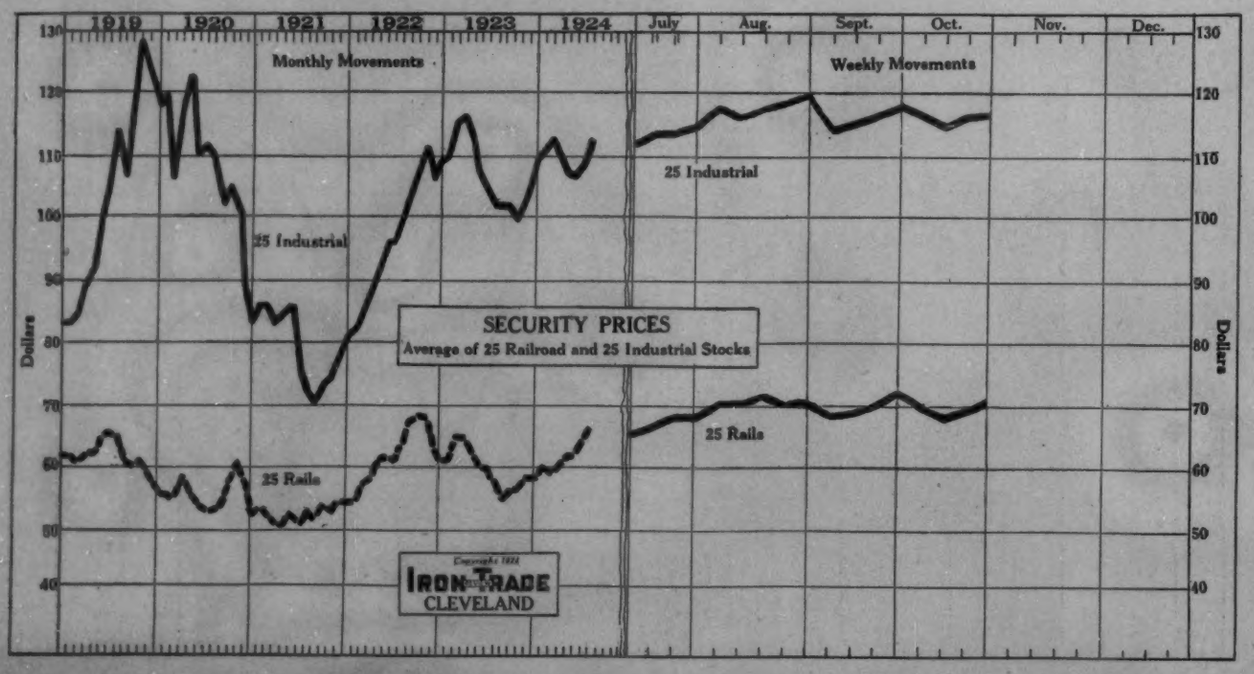


Wage Factor

WAGES in the steel, foundry and machine tool industries are holding stable. The average of wage rates for molders in 11 districts is 90 cents an hour, where it has stood since February. At this level the rate is 122 per cent above the average for January, 1914. Toolmakers in the Cleveland district receive 70 cents an hour, a slight drop from the year's peak of 72 cents from January to June. The rate is 75 per cent above 1914. Steel mill common labor rates remain unchanged at 47 cents or 135 per cent above the 1914 rate.

Securities

THE stock market has been moving a little more confidently recently. It apparently has overcome its previous fears of an adverse election result and is more inclined to respond to the powerfully favorable factors in the economic outlook. The average of 25 industrials reached their high for the year at 122 late in August. Later it dropped to about 113 and at the end of last week it stood at 117.30. The average of 25 rails climbed to 73 in August, declined to 67 early in October and have now recovered to around 70.27.



Current Iron and Steel Prices of Europe

Prices Converted into Dollars at Rates of Exchange, October 27

	British Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgian and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Ports	
Export Prices f. o. b. Ship at Port of Despatch—By Cable	£ s d			Francs		Francs	£ s d	
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$18 00	4 0 0*	$15.01	305	$16 32	340	$21 15	4 14 0
Basic	17.44	3 17 6	16.17	310	16.32	340	23.63	5 5 0
Basic-bessemer	20 25	4 10 0†	15.01	305	15.12	315	21.15	4 14 0
Hematite, Phosphorus 0.02-0.05	19.58	4 7 0	21.38	410	.....	....	25.88	5 15 0
SEMIFINISHED STEEL								
Billets	$30.38	6 15 0	$22.16	425	$22 08	460	$22.50	5 0 0
Wire rods	49.50	11 0 0	28.16	540	27.60	575	29.25	6 10 0
FINISHED STEEL								
Standard rails	$38 25	8 10 0	$25.60	510	$30 00	625	$27 00	6 0 0
Merchant bars	1.71c	8 10 0	1.15c	485	1.12c	510	1.18c	5 16 0
Structural shapes	1 61c	8 0 0	1 15c	485	1.12c	510	1 16c	5 14 0
Plates, ship, bridge and tank	1.76c	8 15 0	1.68c	710	1.35c	620	1 41c	6 18 0
Sheets, black, 24 gage	2 61c	13 0 0	2.84c	1,200	2.56c	1,175	2 35c	11 10 0
Sheets, galvanized, 24 gage, corrugated	3.56c	17 15 0	4.1 c	1,770	4.80c	2,200	4.5 c	22 10 0
Bands and strips	2.21c	11 0 0	1.68c	710	1.53c	700	1.68c	8 5 0
Plain wire, base	2.31c	11 10 0	2.18c	920	1.80c	825	1.94c	9 10 0
Galvanized wire, base	3 01c	15 0 0	2.8 c	1 220	2.34c	1,075	2 25c	11 0 0
Wire nails, base	2.91c	14 10 0	2.37c	1,000	1.80c	825	2 1 c	10 15 0
Tin plate, base box 108 pounds	$5.29	1 3 6	.....	....	.....	....	$6.30	1 8 0

Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$18.00	4 0 0	$15.65	300(2)	$16.56	345	$20 24	88
Basic pig iron	17.44	3 17 6	15.01	305(1)	15.60	325	22 54	98
Furnace coke	3 83	0 17 0	7.82	150	6 48	135	5 32	24
Billets	30 38	6 15 0	21.60	420	22 80	475	23 00	100
Standard rails	1.71c	8 10 0	1.09c	460	1.62c	650	1 25c	120
Merchant bars	1.76c	8 15 0	1.21c	510	1.16c	530	1 16c	111
Shapes	1.76c	8 15 0	1.15c	485	1.14c	525	1 14c	109
Plates, ship, bridge and tank	1.91c	9 10 0	1.71c	720	1.36c	625	1 33c	128
Sheets, black, 24 gage	2.81c	14 0 0	2.84c	1,200	2.67c	1 225	2 24c	215
Sheets, galvanized 24 gage, corrugated	3.66c	18 5 0	4.1 c	1,770	4.91c	2,250	4.54c	435
Plain wire	2.31c	11 10 0	2.28c	960	1.96c	900	1 67c	160
Bands and Strips	2.31c	11 10 0	1.67c	705	1.61c	745	1.51c	145

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 17s 0d ($3.83 f. o. b. Ferromanganese, £13 10s 0d ($60.75) f. o. b. The equivalent prices in American currency are in dollars per ton for pig iron, coke, semifinished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

French Encounter Sharp Competition

European Staff Special

Office of IRON TRADE REVIEW,
23 Rue de la Bienfaisance

Franc—$0.05

PARIS, Oct. 17.—French furnaces and mills are encountering keen competition in export markets. Belgian, Luxemburg and German steel manufacturers are seeking an outlet for their surplus production. The recent depreciation of the franc has rendered French prices somewhat more attractive to foreign buyers, but as the franc goes down living costs increase so it is a question whether the temporary relief offered by a low exchange rate will prove of much assistance eventually.

French metallurgists are insisting upon a reduction in the price of reparations coke. The minister of public works has been approached by several groups of steel manufacturers within the past few days, but promises of lower prices have not as yet been confirmed. Reparations coke is now being invoiced to French consumers at 150.75 francs ($7.50) per metric ton which is 10 to 50 per cent higher than Belgian, English and American pig iron producers are paying for coke. France received 275.896 tons of coke from the Ruhr during September.

Demand for foundry iron for November has been heavy, as consumers have allowed their stocks to run down in anticipation of lower prices. Prices have been advanced from 10 to 15 francs ($0.50 to $0.75) per metric ton during the current week and foundry No. 3 is now firm at 300 francs ($15) f.o.b. furnace. The price of 400 francs ($20) for hematite seems to have disappeared and 410 francs ($20.50) is the best figure now obtainable even on lots of 2000 tons and over. Shipments of iron to Italy have been held up on account of the floods along the Rhine which caused the Paris, Lyon & Mediterranean railroad to suspend transportation over its lines for several days. Much of the traffic moving in this direction was routed over the Simplon, resulting in congestion and delay.

Ferroalloys are firm. Ferrosilicon, 75 per cent, has moved up 50 francs ($2.50) to 1900 francs ($95) per metric ton. French manufacturers of ferromanganese are complaining bitterly over Norwegian competition on this product and are asking higher tariff.

Manufacturers of semifinished steel products have well filled order books. Orders have been received from England and transactions with domestic users have increased in volume. Basic bessemer blooms are quoted at 390 francs ($19.50) per metric ton, and billets average 400 francs ($20).

Prices of finished steel products continue slowly downward. Mills which refused to take orders for less than 100 tons of merchant bars at 500 francs ($25) now are quoting this price on any quantity over 1000 kilos. Although this is the lowest price reported, it has been rumored that at least two mills have made concessions by naming this figure f.o.b. cars buyers works. Freight rates are high in France and the f.o.b. point has a great deal of importance to the buyer. Rail prices have not been tested by any important inquiries, but as an indication of present conditions it is noted that the Compagnis des Forges de Chatillon-Commentry at Neuves-Maisons booked an order for 80 tons of 46 kilo rails for the Port of Lorient at 623 francs ($31.15) per metric ton f.o.b. cars Lorient. Building is quiet and the demand for shapes and plates is tapering off. Structural shapes are quoted at 480 francs ($24) and plates 5 millimeters and heavier at 700 francs ($35) per metric ton f.o.b. mill Eastern district.

IRON TRADE REVIEW
Registered U. S. Patent Office
The Authority of Industry National and International

Charles J. Stark, - - - - - - - - - - Editor
Earl L. Shaner, - - - - - Engineering Editor
John D. Pease, - - - - - Advertising Director

Published Every Thursday by
THE PENTON PUBLISHING CO., CLEVELAND, O.
Member, Audit Bureau of Circulation, Associated Business Papers, Inc., and National Publishers Association

BRANCH OFFICES
BOSTON - - - - - - - - - - 426 Old South Bldg.
CHICAGO - - - - - - - - - - 1147 People's Gas Bldg.
CINCINNATI - - - - - - - - - - 406 Edwards Bldg.
NEW YO K - - - - - - - 2203-2206 No. 220 Broadway
PITTSBURGH - - - - - - - - - - 2148-49 Oliver Bldg
SAN FRANCISCO - - - - - - - - 675 Monadnock Bldg.
WASHINGTON - - - - - - - - - 84 Home Life Bldg.

FOREIGN OFFICES
BIRMINGHAM, ENG. - - - - - - - - Prince's Chambers
LONDON, ENG. - 2-3 Caxton House, Westminster, S. W. 1
PARIS, FRANCE - - - - - 23 Rue de la Bienfaisance

Cable Address IROTRAPEN, London, IROTRAPRI, Paris

Subscription, United States, Cuba and Mexico, $6 per year. Canada, $8.50 per year. Great Britain and other countries, £2:0:0 per year

Entered at the Postoffice at Cleveland as Second Class Matter
Copyright 1924 by the Penton Publishing Co.

Gary Points the Way

MANY memorable and inspiring messages have been directed by Judge Gary to the iron and steel industry and to the country's business interests as a whole, but it is doubtful whether any of these efforts ever has produced, by a common consent, a more favorable reaction than his address delivered before the American Iron and Steel institute held at New York last week.

Judge Gary's addresses always have been featured by the lofty tone of their thought and expression as applied to business topics. On this occasion the high quality was notably apparent but with it was a mixture of fine idealism and practical force. As was to be expected, the greater part of his attention was given to the subject of Pittsburgh plus, embracing extensively the circumstances and events that led up to the issuance of the cease-and-desist order by the federal trade commission and a general appraisal of the probable economic effects of the new conditions upon the steel industry. As to the latter, Judge Gary expressed a very hopeful opinion. It is significant that his address contained not a word of criticism or complaint against the federal trade commission either for the method of procedure adopted or for the manner of edict put forth though there was much that properly might have been said on this score. Rather he urged, at all times, a liberal attitude on the part of the steel industry toward the public and toward public sentiment, turning on the question whether or not the sacrifice of a moral principle was required.

Discussing business conditions, Judge Gary made clear the importance to continued improvement of a satisfactory outcome of the coming national election. He was plain though not partisan. He presented unmistakably the parallel to be expected between the maintenance, on the one hand, of sound and orderly policies of government and the adoption, on the other, of untried or uncertain theories by those of unproved competency.

Judge Gary's address was dominantly optimistic. Manifestly, its effect upon those who heard it, was wholesome and encouraging. It aided greatly in giving to the entire meeting of the iron and steel manufacturers a spirit of renewed faith in future stability and business expansion. Doubtless, to this factor, in a large measure, may be attributed the stronger note of confidence that has characterized the iron and steel market during the present week.

Localizing Prosperity and Depression

CERTAIN definite conclusions may be expressed with reference to the abolishment of the Pittsburgh plus method of quoting steel prices. In every part of the country where prices have been established on an f.o.b. mill basis, the tendency is for localization of the steel business. The advantage lies with the mill having the lowest freight rate to the consumer's plant.

By this localization of business, the cushioning effect of Pittsburgh plus is removed. Under the old method of selling steel, the market was country-wide. On occasions, some parts of the country were more prosperous than others, and the tendency was for local conditions to merge into the whole. For instance, conditions in the Naugatuck valley in Connecticut were very unsatisfactory not long ago. Under the Pittsburgh plus system the manufacturers who supplied the important consuming industry in that section were able to sell elsewhere, and the effects of the slump there were diffused to a large extent in the general business of the country. With localization of business, local prosperity or depression is likely to be more pronounced than under the Pittsburgh system.

The question as to the extent to which the removal of the Pittsburgh plus method is going to bring about the relocation of producing and consuming plants is raised. The answer varies, as far as consuming plants are concerned, in accordance with the conditions prevailing in the

manufacture and sale of the countless articles into which steel is manufactured.

As to the relocation of the steel producing industry, the answer is simple. Certain territories now are consuming more steel than they are producing. The Chicago territory is a notable example. The next expansion in the steel industry on a large scale can be expected in such territories as Chicago. But large expansion cannot be expected at once. The country's consuming requirements are not yet sufficient to support satisfactory prices on steel. An example of the present tremendous cost of building new units is that required for building blast furnaces. A blast furnace that cost around $1,125,000 in 1912, now requires an outlay of $2,500,000 to $3,000,000 to duplicate. A plant built up at present prices is burdened with an overhead which, under present conditions, would render it unprofitable. Until demand makes it necessary to build new units, and the prices make it possible to carry the overhead involved, consumers will continue to get their steel largely from the same plants as at present. The relocation of the steel industry, therefore, will be carried out in the indefinite future.

Considerable speculation is heard as to the effects of the abandonment of Pittsburgh plus on the railroads, with whose prosperity that of the steel industry is so closely associated. Localization of the steel business of the country will tend to replace long-haul business with short hauls. It is the long-haul business which the railroads find most profitable. Complicating this situation is the fact that the motor truck is taking away from the railroads an ever-increasing amount of short-haul business.

Radicals Still May Sway Congress

NO MATTER which candidate wins in the presidential elections, the country faces the menace of radical control of congress and a continuance of a radical balance of power in at least one house of congress. President Coolidge may win the election and still fail to carry sufficient congressional candidates with him to give the administration control of congress. The congressional election situation is such that no matter how the presidential vote goes, one or both houses of congress may be hostile to the President.

The La Follette presidential ticket may fail to win many electoral votes, but even so its strength may be sufficient to be a factor in congressional districts. It is stated that out of the 435 congressional districts, the outcome in about 100 of these districts will determine whether congress will be controlled by a majority and a minority party, or whether a situation will continue in which blocs, groups and a third party shall continue to block legislation and prevent congress functioning as a working body.

As the present senate is constituted, there are 51 Republicans, 43 Democrats and two Farmer-Labor members, not taking into consideration vacancies caused by deaths of two Republicans. About eight of the Republicans and the two Farmer-Labor members make up a radical balance of power with 43 regular Republicans and 43 Democrats unable to do anything by themselves. The house has 225 Republicans, 206 Democrats, three miscellaneous and one vacancy. The Wisconsin delegation of La Follette Republicans holds the balance of power. The Republicans are hoping to win enough members in the house to hold a majority of 25 or more regular Republicans, not counting the radical Republicans.

In the house of representatives prospects are fairly good from the Republican viewpoint that the Republicans will have control by a narrow margin but in the senate scarcely anything short of a clean sweep can give the regulars control.

Urge Replacement of Implements

MANUFACTURERS of farm implements are amply justified in launching a campaign to persuade the farmer to replace his equipment more frequently. With agriculture each year more firmly upon a quantity production basis the successful farmer must modernize, must abandon his habit of using his equipment, no matter how antiquated or patched, until it actually is unserviceable.

As was pointed out last week at the annual convention of the National Association of Farm Equipment Manufacturers in Chicago, few articles of daily commerce are utilized until literally worn out. Something new, something better, is constantly coming along, and replacement is generally with profit to the purchaser. Few automobiles are driven by their original owners until they are ready for the scrap heap. The railroads each year junk hundreds of locomotives which are still able to function but are uneconomical in comparison with newer types.

But the farmer, despite the progress being made each year in the implement industry, is prone to operate his equipment until it falls apart. Manufacturers will seek to teach him that true economy lies in frequent, judicious replacement. The farmer today is spending on new equipment only 3.3 per cent of his total expenditures. That this could be doubled, with mutual profit, is not doubted. The implement industry consumed last year only 2.37 per cent of the country's steel production; a 100 per cent increase would not be marked but **greater prosperity for the farmer is the basis for all** improvement in the general welfare.

Institute Emphasizes Confidence

Leaders of Iron and Steel Industry Comment on Increased Volume of Business at New York Meeting—Express Hope for Satisfactory Result of Election —E. H. Gary Speaks on Outcome of Pittsburgh Plus Case

DESPITE the confused situation which has resulted in many cases from the recent abolition of the Pittsburgh plus system by the United States Steel Corp., and despite the imminence of the approaching election, sentiment in the iron and steel industry, as expressed informally at the meeting of the American Iron and Steel institute in New York, Oct. 24, is cheerful. Judge Gary's statement in his opening address, published in full elsewhere in this issue, that the daily average bookings of the United States Steel Corp. subsidiaries had increased 29,000 tons since May, found echoes in informal remarks by executives of other companies.

John A. Topping, of Republic Iron & Steel Co., said that stocks in the hands of buyers are small and that the hand-to-mouth buying has increased 10 to 15 per cent. E. G. Grace, president, Bethlehem Steel Corp., said operations of his company had increased from 31 per cent last July to 65 per cent. Willis L. King, Jones & Laughlin Steel Corp., reported an upward tendency in business and stated his company is operating at about 65 per cent. James A. Campbell, Youngstown Sheet & Tube Co., said his company is operating at 55 per cent, compared with 30 per cent a few months ago. It was believed generally that the recent tendency toward improvement would be continued into 1925, provided that President Coolidge is re-elected.

INTEREST in the coming election easily outshadowed everything else at the meeting. That the industry is substantially a unit in its politics was demonstrated by the general acclaim which greeted the name Coolidge every time it was pronounced. Judge Gary's failure to mention a name when he gave his formula of the kind of a man who should be elected did not trouble anybody for a moment. Judge Gary's words were received as comprising a faithful and workmanlike endorsement of the Coolidge qualifications. The sentiments of those present, representing the whole country, from Boston and New York to California, and from Minnesota to Birmingham, showed that the iron and steel industry is taking its politics straight.

A speech which well summarized the sentiment of the members of the institute was that of Frank A. Munsey at the banquet. Mr. Munsey characterized the present campaign as the most important in his recollection. "We have a new political alignment," said Mr. Munsey. "The radical forces are determined to have a party of their own or they are going to possess the Democratic party." Mr. Munsey, after sketching the political developments in the various states, said, "Due to the coalitions between Democrats and LaFollette men, we must elect Coolidge or have Charles W. Bryan as our next president."

Discuss Scrap Situation

The interest shown in the papers on iron and steel scrap again showed conclusively that the membership of the institute pays more attention to problems concerning the business side of the steel industry than the technical and metallurgical problems involved in the production of steel. The major features of what really constituted an iron and steel scrap symposium, were papers presented by W. Vernon Phillips of the Perry Buston Doane Co. and by E. J. Lowry, Hickman, Williams & Co. Discussions of these papers were presented by Joseph Michaels, president of Hyman-Michaels & Co., Chicago; Albert Mann, vice president of the Illinois Central Railroad Co., and W. A. Maxwell Jr., general superintendent, Inland Steel Co., Indiana Harbor.

Judge Gary's narration of the history of the Pittsburgh plus system and its abolition, and his expression of his belief that neither producers nor consumers will suffer materially by reason of the elimination of the old basing method, did not call forth much comment. It was suggested by one steel man that the situation resulting from the abolition of Pittsburgh plus is too new, and that very few producers or consumers as yet have clear ideas as to what the ultimate effects will be in their particular cases.

Arthur Brisbane Speaks

Arthur Brisbane, newspaper editorial writer, delivered one of his characteristic speeches at the banquet. He told about some of the editorials which he is sending out for publication in the papers throughout the country which he serves. One of them concerned the so-called foreign steel trust, which, cable advices have said, is in process of formation by French, German and Belgian steelmasters. In his editorial, he said, he pointed out that the United States cannot hope to compete against such big corporations abroad as long as it discourages the formation of big interests at home. Mr. Brisbane also directed attention to the fact that the United States is practically defenseless against modern offensive war tactics. He recommended a big fleet of airships as the best defense we could have. He pointed out, incidentally, that France has 2000 airships in her first line of defense and could destroy such cities as London, Liverpool and Manchester within a few hours after declaring war. He concluded that it pays to be polite to a country possessing such impressive fighting forces.

J. B. Maclean, head of the Maclean Publishing Co., Toronto, paid a tribute to the leadership of Judge Gary in the iron and steel industry. He said that Gary has taught the steel industry that it holds a public trust. The resulting general attitude toward buyers, employes and the general public is one that wins a constantly increasing degree of friendship. He said Judge Gary's leadership has been the greatest single stabilizing factor not only in the steel business in this country but also in politics.

Hostile Toward Industry

Mr. Maclean said that the lack of such leadership is keenly felt in Canada where the general feeling toward large industries has been one of increasing hostility during the past 10 years. During a period when practically all other large countries have raised their tariff walls, Mr. Maclean said, Canada has cut down her tariff five times and there are demands for a further cut. He told of the demands for government ownership in Canada and thought that such leadership as that of Judge Gary would have the effect of preventing such unfortunate tendencies.

The paper on blast furnace practice in the Birmingham district, by R. H. Ledbetter, was discussed by H. E. Mussey, superintendent of furnaces of the Woodward Iron Co., Woodward, Ala. The paper on blast furnace slags by Prof. Richard S. McCaffery, was discussed by B. E. Pheneger, assistant general superintendent of the Newburg works of the American Steel & Wire Co., Cleveland, and by G. M. Hohl, superintendent of blast furnaces of the Bethlehem Steel Co. at Bethlehem. The paper on slag brick by

C. E. Ireland was discussed by P. J. Freeman, chief engineer of tests and specifications, public works department of Allegheny county, Pittsburgh.

Horace T. Wilkinson, chairman of the board of the Crucible Steel Co. of America was elected a director of the institute to fill a vacancy which has existed ever since the number of directors was increased.

Sidelights at Institute Meeting

WHEN will the American Iron and Steel institute hold another meeting away from New York? This question was frequently heard informally at last week's meeting of that body in the eastern metropolis. There are several reasons why the directors of the institute are not enthusiastic about arranging for meetings in Pittsburgh, Birmingham, Cleveland, St. Louis or Chicago. In the first place a meeting in New York always can be counted on to draw an attendance of 1200 to 1500, whereas 900 is a large number away from New York. In the second place, it is harder to find facilities for a meeting of 900 away from New York than for a meeting of 1500 in that city. Another reason which has been advanced is that it would be a hardship on judge Gary to force him to make trips for the purpose of presiding over meetings in other cities. However, in view of Judge Gary's prowess as a traveler to South America, Alaska, the Holy Lands and other places, it may be assumed that the first two reasons are the most weighty.

* * *

Most distinguished of the figures at the reporters' table while Judge Gary read his opening address was Willis L. King. Mr. King took out his pen and made some notes. This did not fool anybody, however. It was assumed that he sat there simply because it was a good place to hear and see everything. Mr. King smoked a cigar which was considerably better in quality than that smoked by the average bona fide reporter.

* * *

There was much comment at the meeting over the publication by the newspapers of income tax returns of prominent individuals. This was regarded as another of the series of outrages which have been perpetrated by legislation at Washington in recent years. Nevertheless, the publication of the returns was read with much interest.

* * *

"I am going to vote for Coolidge and I certainly hope he will be elected" said one steel buyer. "The election of Davis, Bryan or LaFollete would be followed by a period of uncertainty that would hold up business. The Democrats would want a new tariff and this would keep us in the air for two or three years. As far as LaFollette is concerned, I think his bark is a lot worse than his bite. But it would take a long time before we would know just where we stood with him. On the other hand, business is all set to go ahead as soon as Coolidge's re-election has become a certainty."

* * *

Charles M. Schwab related an incident of his recent home-coming reception at Homestead:

"Jimmie Dugan in the old days was a good heater at the Homestead plant. As he got along in years, he decided the work was too heavy and he opened up an undertaking establishment. In front of his place of business he has a big show-window and in this window on the day of the celebration he had a big sign with the words 'Welcome Charlie!'"

New Stack To Produce Ferrophosphorus

J. J. Gray, manufacturer of ferrophosphorus, has contracted with Arthur G. McKee & Co., Cleveland, for the design and construction of a new blast furnace at his plant at Rockdale, Tenn.

Although the manufacture of ferrophosphorus is ordinarily confined to electric furnace or similar operation, Mr. Gray has, for some time past, produced this alloy in a blast furnace, under a patented process controlled by him. Operations, however, have been on a rather small scale, and it is now planned to materially increase production by dismantling the existing furnace and providing a complete new stack, approximately 70 feet high with 12-foot hearth.

On account of the peculiar difficulties and hazards incident to the manufacture of ferrophosphorus, the furnace will be provided with a specially constructed gas tight hearth and bosh, the hearth jacket being of cast iron with machined joints. The tuyere breast and bosh jacket will be very heavy, cooled by special means, and provided with heavy steel bands to insure against the escape of the phosphorus produced in the smelting operation.

Bethlehem Report Reflects Summer Reaction

Curtailed operations of the steel industry are reflected in the third quarter report of the Bethlehem Steel Corp. The statement of earnings shows that the company earned $102,167 more than fixed charges and depreciations and depletion reserves in the three months ended Sept. 30. This compares with net earnings of $1,278,277 after the same deductions in the second quarter of the year and $4,519,875 in the first quarter.

After allowing for preferred dividends there was a deficit of $972,962, against a surplus of $203,167 after preferred dividends in the June quarter.

The statement of earnings for the first three-quarters of the current year shows the following:

	Third quarter 1924	Second quarter 1924	First quarter 1924
Total income	$6,495,731	$7,400,894	$10,549,149
Interest, other charges	3,466,107	3,189,173	3,079,598
Balance	3,029,624	4,211,721	7,469,551
Reserve, depreciation, depletion, etc	2,927,457	2,933,444	2,949,676
Net income	102,167	1,278,277	4,519,875
Preferred dividend	1,075,129	1,075,110	1,075,021
Common dividend	.....	.....	2,247,571
Deficit	$972,962	*$203,167	*$1,197,283

*Surplus.

For the first nine months of the year the company's net income was $5,900,319 after all charges. Total income for the nine months was $24,445,774.

In his official statement President Grace said:

"The earnings covering fixed charges but not preferred dividends reflected low operations, represented by a steel output at 42 per cent of capacity, compared with the previous quarter of 48 per cent. That the year to date (nine months) showed earnings on the common stock of $1.48 a share or at the rate of $1.97 for the year on an average operation for the nine months of 54 per cent."

Regarding operations, Mr. Grace said: "A very encouraging feature of the situation was the monthly increase throughout the quarter, represented by monthly output of July, 31 per cent, August, 45 per cent, September, 52 per cent, with present operations running at a rate of 65 per cent, or more than double the low rate of July.

"Notwithstanding the increased rate of production, the volume of orders on hand at the end of the quarter amounted to $49,971,161 as compared with $40,196,928 at the end of the second quarter."

National Air Oil Burner Co., Philadelphia, has increased its capital stock from $75,000 to $100,000.

Steel Industry on New Basis

Producers and Consumers Will Not Materially Suffer By Elimination of Pittsburgh Plus System—Confidence in Result of Election, Indicated By Increase in Business, Is Justified

BY E. H. GARY

ON JULY 21, 1924, the federal trade commission ordered that the respondents, United States Steel Corp. and its subsidiary companies, cease and desist from quoting for sale or selling in the course of interstate commerce their rolled steel products known as plates, bars, structural shapes, sheets, tin plate, wire and wire products at "Pittsburgh plus" prices or upon any other basing point than that where the products are manufactured, or from which they are shipped, or without clearly and distinctly indicating in such sales the price charged at shipping point and how much is charged for transportation; and also from discriminating in price between different purchasers within the United States or any territory thereof, or the District of Columbia or any insular possession, where the effect may be to lessen competition in interstate commerce, provided nothing should prevent discrimination on account of difference in grade, quality or quantity, or that makes only due allowance for difference in cost of selling or transportation or that is made in good faith to meet competition.

It is at least doubtful that if the respondents had appealed to the courts for full and final consideration of all the questions involved, the order of the federal trade commission would have been approved and upheld as coming within the power and authority of the commission. As to this view you can refer to your legal departments. Indeed, you probably have already done so.

However, after giving the whole subject careful consideration, the respondents concluded to cheerfully accept and acquiesce in the decision. Many of the leading independents in the steel industry, and perhaps all of them, followed suit.

Many of you were startled by the action of the commission and temporarily, at least, entertained feelings of disappointment and dissatisfaction. More than that, your business activities and progress have been interrupted, impeded and in places almost demoralized. As yet, you have not been able to restore the natural trend of affairs. Sellers and purchasers alike have been groping for a course that would permit a basis for transactions which would furnish the stability and uniformity which every department of business effort desires and seeks. For the best success in industrial enterprise of any kind it is as necessary to have some standard to reckon from as it is to have a gold dollar basis to make comparison and computation.

You are encountering and will continue to encounter difficulties. You may decide to appeal to the courts for remedy; but you are beseeched to give the matter most patient and painstaking thought before doing so.

You have heard that much energy and considerable money has been expended in creating a sentiment that Pittsburgh plus is wrong in principle; and you have indulged a feeling that the proceedings before the commission were influenced by personal and selfish motives; but concerning this all of us should endeavor to consider both sides of the case before reaching a final decision.

It will be atteempted in this discourse to give a full and strictly accurate account in substance of the facts relating to the Pittsburgh plus matter.

In the earlier days, because of the iron and steel, manufacturing and consuming enterprises sprang up in the central coast states, with Philadelphia as the center. This led to Philadelphia becoming the principal importing point for foreign iron and steel. Therefore, Philadelphia was the natural basing point, and purchasers elsewhere bought at Philadelphia prices and paid the cost of transportation to the respective places of consumption. Later the manufacture of iron and steel was begun at Pittsburgh and this rapidly grew in volume. That was then the best location with respect to cost of assembling the raw materials and distributing the finished products. It was adjacent to the steam and coking coal and limestone, easily and cheaply reached by the iron ore via the Great Lakes and a short railroad from Lake Erie to Pittsburgh, and it rapidly became a great main line railroad center. Consequently, Pittsburgh almost suddenly and naturally became the basing point.

For a great many years the cost of producing iron and steel was materially less at Pittsburgh than it was at any other place in the United States. In fact, with equipment in every respect up to the very latest standards, costs at Pittsburgh still are, and will continue to be, with the lowest in the comparative columns. Moreover, the volume of iron and steel produced there still is and will probably remain the largest of any location in the world. If there should be any single basing point for the sale of iron and steel, such as Chicago for wheat or beef and pork, it would naturally be Pittsburgh.

Except for changes in conditions and circumstances, arising during the last few years, Pittsburgh unquestionably would still be the basing point for iron and steel. Except for the

Fair Trial Urged for New Selling System

MANY of you were startled by the action of the trade commission and temporarily, at least, entertained feelings of disappointment and dissatisfaction. More than that, your business activities and progress have been interrupted, impeded and in places almost demoralized.

You may decide to appeal to the courts for remedy; but you are beseeched to give the matter most patient and painstaking thought before doing so.

It is believed the entire iron and steel industry will, within a reasonable time, voluntarily be operating on a basis conformable to the opinion rendered by the commission, and that if we are patient and reasonable we shall find, though with perhaps some additional work and cost, the industry, taken as a whole, and including both producers and consumers, will not materially suffer by reason of the elimination of the Pittsburgh plus system.—E. H. GARY.

Address of the president of the American Iron and Steel institute at meeting of the institute, New York, Oct. 24.

very system of Pittsburgh plus, such would be the case. That is, without larger selling prices at Chicago, for instance, than Pittsburgh, furnaces and steel mills would not have been erected in the Chicago district, for investors could not afford to do so. The selling prices necessary to enable capital to secure reasonable returns on investments at Chicago in competition with Pittsburgh were realized by taking as a measure the Pittsburgh prices and adding the amount of freight between the two cities. This was the only way new locations like Chicago, South Chicago, Gary, Cleveland, Lorain, etc., could influence the establishment of new steel plants in their districts.

But new elements from time to time during the last few years have appeared in the competitive conditions pertaining to the iron and steel industry. We have seen improvement in practice, such as the lower cost of fuel for the open hearth and blast furnaces by modern coke ovens and the utilization of by-products, the employment of immense sums in creating larger units and the building of breakwater protection and canals in the south shore of Lake Michigan, which permitted the delivery of iron ore from the mines direct to furnaces, thus matching in part the lesser freights on coal from Kentucky, West Virginia and Pennsylvania to Pittsburgh.

These changes, with others that might be mentioned, together with somewhat larger selling prices, have enabled iron and steel manufacturers at Chicago to successfully compete with Pittsburgh furnaces and mills. As time passed the costs of production at some of the Chicago district works were as low as Pittsburgh, or nearly so, depending upon methods and equipment, and new mills and furnaces at the former were constructed and put into operation.

Subsequently, complaints, increasing in volume, were made that purchasers in certain middle-western localities, were being discriminated against; that it was not just for a Chicago district manufacturer to charge a larger price for steel to be used near or west of the productive plants than the amount charged to Pittsburgh purchasers, arbitrarily adding a sum equal to the freight between the two points when it was not actually paid; that the basis of charging, which was called Pittsburgh plus, was no longer fair and reasonable.

There is not sufficient time, nor is it necessary, at present to attempt further explanation concerning the changes in the general situation which justified the erection of iron and steel works in the Chicago district, and the progress they made. It is sufficient to say up to the period when the United States Steel Corp. was formed, the furnaces and mills at Chicago were not able to successfully compete with the Pittsburgh manufacturers, even with the latter as a basing point for prices so far as it could be used.

Also, in discussing Pittsburgh plus or Pittsburgh basing point, we should not overlook the fact that in actual practice, for several years, the system to a greater or less extent has been disregarded by the producers. The competition amongst manufacturers, located in the Chicago district, has been so great on account of their increased and increasing capacity, that they have paid little, and, in a majority of cases, no attention whatever to the question of freight rates from Pittsburgh to western points.

It is worthy of mention that competition, when it is free and open, uninfluenced by artificial means, always has and forever will and ought to fix the selling and purchasing prices of all commodities. Of course, prices will vary to different purchasers, scattered throughout the country, influenced by locations, close to or remote from producing points, capacity and costs of production, necessary charges for transportation, etc.

No law or application of legal principles can ever eliminate or change the effect of free and natural competition. It is to protect against artificial or controlled measures or combinations which restrain open and free competition, that laws are provided and enforced.

In subscribing and conforming to this principle, the iron and steel industry must and will take a leading part. It is to be hoped and expected that this industry will likewise be afforded protection against combinations or other measures calculated to restrain natural competitive conditions.

In March, 1919, the iron and steel industry of the United States was reasonably prosperous. The Chicago district had become important. Its productive capacity was large. Its plants were numerous, comparatively new and modern in design. Its costs of manufacture compared favorably with Pittsburgh. Competition amongst the Chicago manufacturers was brisk, and the Pittsburgh plus system was to some extent in force. On March 15, 1919, your president received from the late John S. Miller, then a distinguished and leading lawyer of Chicago, a letter dated March 14, 1919, stating that he had "been retained by the Western Association of Rolled Steel Consumers to take up and look into their complaint of price discrimination on the part of producers of steel against the rolled steel consumers in this territory, such as compose the membership of the Western Association of Rolled Steel Consumers."

He stated that upon looking into the matter with some care, their complaint seemed to him to be well grounded; that his clients would like to have this discrimination removed without the least bit of friction; and suggested a conference. On March 18, 1919, your president answered Mr. Miller as follows:

"I beg to acknowledge recept of your letter of March 14 instant. I have for some time been carefully considering the subject as an economic one from the standpoint of what is fair and just. As yet, I have not secured an unanimous opinion. However, I do not think it is hopeless."

As many of those who are present know this letter stated the facts.

About May 8, 1919, your president wrote to Mr. Miller:

"There is no intentional, unnecessary

(*Concluded on Page* 1182)

Confidence Expressed in Result of Election

THE future success of the iron and steel industry in this country is assured if the managers will keep their heads, and further if the approaching election results shall be satisfactory. All of us, all the people of the United States must together enjoy prosperity or suffer from adversity.

Sentiments of self protection will influence the large majority of voters to give careful thought to the best interests of the country and to themselves, and they will therefore wisely discriminate and decide.

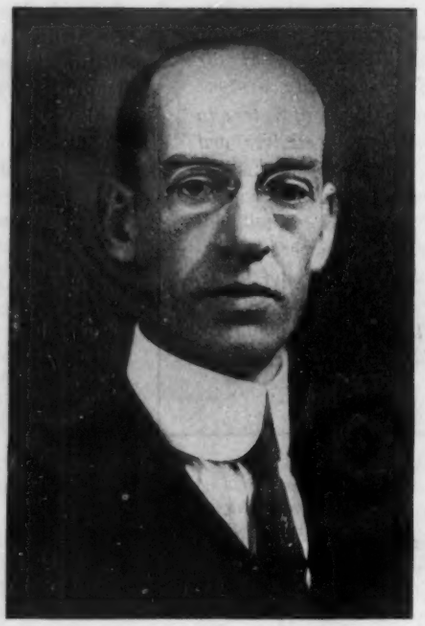
In this most important, if not critical, period in our history, they can be depended upon to act along the lines of prudence and safety. They will not take unnecessary chances of danger by adopting untried and uncertain theories or selecting officials whose competency is assured largely, if not alone, by their own professions and promises.

I am convinced the public has been right during the last few months in believing the election returns will be satisfactory, as shown by the steady and persistent increases in the volume of business.—E. H. GARY.

E. J. LOWRY

Discuss Many Problems at Institute Meeting

E J. LOWRY, metallurgical engineer for Hickman, Williams & Co, at Chicago, is a graduate of Harvard university and the Massachusetts Institute of Technology, having specialized in metallurgy. On completing his courses he became a foreman in the Watertown, N. Y., arsenal, leaving there to go with the United States Cartridge Co. during the war. At the close of the war Mr. Lowry went to South Bend, Ind., to carry on research work in malleable, gray iron and steel castings for the Oliver Chilled Plow Works. In 1922 he became affiliated with Hickman, Williams & Co. as metallurgical engineer to advise with foundrymen and assist them in their melting problems. Mr. Lowry is a member of the American Foundrymen's association, the American Institute of Mining and Metallurgical Engineers and the American Society for Steel Treating. He has written a number of articles on raw material used in iron and steel manufacture and presented a paper, "The Effect of Chill on Cast Iron," at the recent convention of the American Foundrymen's association at Milwaukee. His paper before the American Iron and Steel institute was entitled "Iron and Steel Scrap" and dealt with the metallurgical side of that subject.



W. VERNON PHILLIPS

W VERNON PHILLIPS was born in England in 1875, the son of the late F. R. Phillips, prominent in the Welsh tin plate industry. F. R. Phillips came to the United States with his family in 1883 and was a pioneer in the importation of Welsh tin plate here. Later he manufactured tin plate in this country as well as machinery for making tin plate. His business was known as F. R. Phillips & Sons Co., with headquarters in Philadelphia. F. R. Phillips, with William H. Perry, in 1912 organized the Perry Buxton Doane Co. W. Vernon Phillips is chairman of the Perry Buxton Doane Co. and president of F. R. Phillips & Sons Co., the Ettenger-Phillips Co., the Phillips-Lafitte Co. and the Steel Scrap Co. He is recognized as one of the country's leading experts in all questions relating to the iron and steel scrap business. During the war he was chairman of the scrap division of the war industries board. He was consulted in all actions which the American Iron and Steel institute took with reference to scrap during the war. Mr. Phillips is a director of the Lansdowne Trust Co. and the Drexel Hill Trust Co. and is burgess of Yeadon, Pa. Mr. Phillips was awarded the decoration as a cavalier in the Order of the Crown of Italy for the services rendered during the World war. His paper for the recent institute meeting was on "Iron and Steel Scrap," dealing with the commercial problems of that topic.

R. H. LEDBETTER

R H. LEDBETTER, superintendent of blast furnaces at the Ensley plant of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., was graduated from the University of Alabama, Tuscaloosa, Ala., in 1906. He joined the Tennessee company shortly afterward as a chemist, serving at the Ensley blast furnaces from 1906 to 1908. From 1908 to 1910 he was a chemist at the Alice furnace, and in the next two years was superintendent of that furnace. From 1913 to 1916, Mr. Ledbetter was superintendent of the Oxmoor furnace of the Tennessee company, and from that year until 1924 was superintendent of the Oxmoor and Bessemer furnaces. In March this year he was transferred to the Ensley plant where he superintends the operation of six blast furnaces.

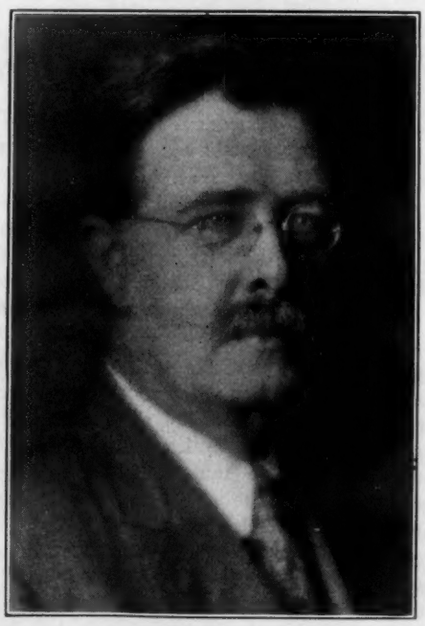
Papers Present Results of Authors' Research

C. E. IRELAND

C. E. IRELAND, vice president and sales manager, Birmingham Slag Co., Birmingham, Ala., has been actively identified with the crushed stone and slag industry for the past 20 years. He was born in Middle Point, O., 38 years ago. His father, C. L. Ireland, of Van Wert, O., was one of the pioneers in the crushed stone business in the Middle West where he was associated for over 25 years with the France Stone & Slag Co., interests prior to January, 1916. On Feb. 1, 1916, C. L Ireland, with his three sons H. G., C. E. and C. B. purchased and took over the management and operation of the Birmingham Slag Co. which had been operating a small crushing and screening slag plant for a limited commercial market since 1912. The old plant, which had an annual output of approximately 100,000 tons was replaced in 1917 by the largest and one of the most modern electrically operated plants in the United States. It is located on the property of the Tennessee Coal, Iron & Railroad Co., Ensley, Ala. C. E. Ireland was one of the organizers of the National Slag association, Cleveland, in 1917, and is its vice president and a member of its problems committee at this time.

FRANK LESLIE ESTEP

FRANK LESLIE ESTEP of Perin & Marshall, New York, was born in Jeffersonville, O., Aug. 20, 1875, and was graduated from Ohio State university, Columbus, O., as a bachelor in mechanical engineering. He joined the Columbus Street Railway Co. in 1898 and was connected with that company and the Beloit Electric Co. in that year and 1899. He was associated with the Morgan Engineering Co., Alliance, O., the Schoenberger Works, Pittsburgh, of the American Steel & Wire Co., Jones & Laughlin Steel Corp., Pittsburgh, and Lorain Steel Co. from 1899 to 1900. From 1900 to 1905 Mr. Estep was connected with the Bridgeport Brass Co., as superintendent of its Union branch. He was assistant general superintendent of Detroit Copper & Brass Rolling Mills, 1905 to 1907, and was engineer for the Rome Brass & Copper Co., the next year. He then was with the Cambria Steel Co. until 1910 when he became assistant chief engineer of the Tennessee Coal, Iron & Railroad Co., holding the position of chief engineer until 1917. He was chief engineer for the Nova Scotia Steel & Coal Co. in 1917 and 1918. In the latter year he became a partner and chief engineer of Perin & Marshall, construction engineering, with headquarters in New York. Mr. Estep is a member of the American Society of Mechanical Engineers, American Iron and Steel institute, American Institute of Mining and Metallurgical Engineers and the association of Iron and Steel Electrical Engineers.



RICHARD S. McCAFFERY

RICHARD S. McCAFFERY was born on June 2, 1874, in New York and was graduated in 1896 from the School of Mines of Columbia university, that city. At various times, Prof. McCaffery has been personal assistant on research work to Henry M. Howe; instructor in metallurgy at Columbia university; superintendent and afterwards manager of the Santa Fe Copper Co.; superintendent of the Copper Corp. of Chili; manager of the Salt Lake Copper Co.; general superintendent of the Tintic Melting Co.; manager of the Glamorgan Works; professor of metallurgy at the University of Idaho, Moscow, Ida., and, since 1914, professor of metallurgy at the University of Wisconsin, Madison, Wis. Professor McCaffery's paper before the institute will be on "The Constitution of Iron Blast Furnace Slags."

Scrap Trade Becomes Industry

More Manufacture Now Necessary To Prepare Waste Material for Use of Mills —Variation of Standard from Active to Dull Period Cause of Much Misunderstanding—Foretells Market Changes

BY W. VERNON PHILLIPS

STEEL scrap for the basic open-hearth probably represents 80 to 90 per cent of the iron and steel scrap consumed today. It was not long ago that the major portion of all ferro scrap was used by rolling mills, either for direct rolling, piling, shingling, busheling or puddling. During the last generation a two-fold change has taken place, due to the greatly reduced operation of the rolling mill, and the expanding use and wider practice in the open-hearth. The scrap dealer and producer has had to gradually change his method of preparation, and study the needs and possibilities of the open-hearth, while the steel mill has had to study the problem of using scrap in a greater variety and of more liberal specification. The result is that during this period of readjustment the steel mill is constantly complaining that the dealer is failing to ship what he sold, and the dealer is complaining that the mill is unreasonable and inconsistent.

During periods when the demand is normal, the mill, while ordering a strictly No. 1 specification, accepts an average class of steel scrap; when the demand increases it becomes more liberal in inspection, as it is in need of the material; but the moment the supply meets the demand, the mill falls back on its strict specification, and requires a grade of scrap which the dealer not only cannot supply, but also has not during normal times been expected to supply. This is the crux of the whole situation.

The Purchasing Agents' association has endeavored, in conjunction with the department of commerce, to correct this situation, by drawing up new specifications, even more severe than the old, forgetting or not knowing that the root of the trouble is in the strictness of the present specification.

The truth of the matter is there is not sufficient high grade scrap to meet the needs of mills running normally. When operations fall off and become subnormal, they secure an ample supply of good scrap; but when demand exceeds normal (and by normal we mean 60 per cent), they must accept a proportion of poorer scrap. Thus we have the paradoxical position of "the higher the price, the poorer the scrap."

The only cure for this condition is for the mill to stay in the market for scrap all the time. This would prevent the serious fluctuations which hurt the mills, and do not benefit the dealers. With serious price fluctuations reduced there would be a tendency to steady the grade, as the dealer will know what would be suitable, instead of knowing that he will be forced to cull out his good scrap to ship on the poor markets, and carry his poor grades until a strong demand sets in.

It is useless for the buying trade to say that they want only the highest grade, or will not take the second grades.

Dealer Must Buy All

The dealer cannot discriminate when he buys; he must take the entire locomotive; he cannot buy the choice part of a ship, or a building, or the acceptable parts of a freight car. What is he going to do with the portion that runs slightly under ¼-inch thick? It is all acceptable enough when the mills want it, but if any piece of steel in the car is below specification on a falling market, the entire car is rejected. The shipper is immediately put in the criminal class and told that, since they have every reason to believe that if bad material appears on the top of the car, a lot more of this light, mean, miserable stuff will be found underneath, in order to warrant them taking the risk of unloading they must have a reduction of $1, $2 or $3 a ton.

The instance is to some extent exaggerated and of course is not general in its application. There are many mills who pursue a reasonable course, either buying a high grade of scrap and paying a premium for it, or buying on the standard specification and taking in all cars on their merits, using a fair scale of reductions from the contract price, regardless of market conditions. This condition is not confined to heavy melting steel. The same conditions apply to low phosphorus scrap, blast furnace and rolling mill scrap, but to a lesser extent. Nor is the fault by any means to be laid entirely at the door of the consuming mills. Many dealers deliberately doctor or improve the appearance of their cars, and in many instances brokers who are caught with bad orders on a rising market will knowingly buy inferior material in an endeavor to cut down their losses, but neither of these expedients profits either of them in the end.

As a rule, the dealer tries hard to ship what he has sold. He is punished so severely when he fails to do this, that there is little incentive to try to get by with inferior material.

It has reached a point where the scrap business has ceased to be really profitable, due to the heavy freight charges entailed in moving rejected cars, the exceedingly high demurrage charges and the prohibitive cost of laying down material.

The dealer was formerly able to deliver steel scrap to Pittsburgh at $14 (the average price before the war) and make a profit. Today the high cost of transportation and labor have increased the cost to $19.25, based on buying the material at the same price and using an average outside point for freight rates. Thus a $19 market today is not nearly as high as $14 was then.

As a business, scrap reverses all normal merchandising, in that the competition is to buy, not to sell. The larger operators or brokers (as they are erroneously called) maintain large organizations with branch offices, and their buyers spread over large areas, while one or two men can do all the selling, the sales being made in thousands of tons whereas the purchases are in carloads, or at most in hundreds of tons.

Scrap formerly was scrap, but woe to the dealer who would now ship 0.80 chrome on a nickel plate order, or 0.05 sulphur on a low phosphorus steel order. He must not ship street car rails, as the cast iron welds may be high in sulphur, and if there are no welds, they are sure to contain a lot of concrete or cement, and yet they must be melted by someone. He must not ship bushy turnings, though the blast furnaces are constantly calling for more turnings, meanwhile the ma-

(*Concluded on Page* 1162)

From a paper delivered before the American Iron and Steel institute at New York Oct. 24. The author is connected with Perry-Buxton-Doane Co., Philadelphia.

Making Brick from Slag Concrete

Southern Company Develops Important Use for Slag Sand, or the Finest Size of Crushed Blast Furnace Slag—Product Is Steam Cured and Yard Dried but Is Not Burned

BY C. E. IRELAND

WHEN blast furnaces started producing slag it was necessary to dispose of it as cheaply as possible, and to do this it was poured from tall pine pole trestles located near the furnaces. This method spread out slag over acres of valuable land or gradually built up mountains of slag which necessitated steep grades for the slag trains to climb. No care was exercised in dumping slag in piles separate from other waste materials, such as flue dust, brick and other refuse from around the furnaces, thus during reclaiming for marketing in a limited way, much of it was rejected by the consumer on account of the waste materials it contained. It was impossible for the excavating shovels to pick out the clean slag when poured in this manner. Most of the material was marketed as railroad ballast, but even then the waste materials were objectionable, in that they held moisture and shortened the life of cross ties.

When slag was finally brought into use as a concrete aggregate, sizing was difficult because waste materials were hard to segregate, and also because the slag was flat, elongated and porous from being poured down steep embankments and allowed to cool quickly in thin sheets. Its uses under this method of treatment were limited, and the material was not accepted by most engineers as a concrete aggregate.

To overcome these objectionable features, the steel company, together with the slag company, worked out and put into use what is known as the modified pouring pit system. Under this system, four pits 1000 feet long, 50 feet wide and 15 feet deep, are used. These pits are adjacent and require only two pouring tracks, thereby minimizing trackage. They are located near the furnaces and are permanent, being refilled when excavated by shovels of the slag company. These pits are filled only with clean slag, and as it is poured in, it puddles itself into thick layers and cools slowly. Upon being excavated by electric shovels the slag breaks into large, solid, cubical pieces, is loaded into trains of three 20 cubic yard side dump cars, electrically operated, and transported to the plant. The slag is dumped from these trains into a hopper over crushers located below the ground level, being fed to the crushers over a scalping screen which by-passes the small slag around the crushers directly into the skip loading hopper. Two 8 cubic yard skips are used to elevate the slag from the crushers to the top of the plant, where it is fed onto screens over magnetic pulleys, these pulleys catching all slag that contains iron and dropping it into a separate bin for return to the furnaces. Large pieces of iron, sometimes 3 feet in diameter, are caught going over the scalping screen and are thrown out.

Nine Sizes Are Produced

In passing through the screens, nine different sizes of slag are produced, these ranging from 4 inches down to dust. Large pieces of slag, from 6 to 20 inches, are produced for the government for use on the Mississippi river banks as rip-rap. During the past 3 years approximately 80,000 tons of this size have been used. The other sizes produced are used in many types of construction, such as concrete highways, concrete foundations, reinforced concrete bridges and buildings, water bonded macadam, bituminous macadam, asphaltic concrete and various patented types of pavements. Slag has been found to be ideal for the last named types of highway construction on account of its natural bonding properties. It also has been used in sewage filtration plants with much success. It is used in large quantities for railroad ballast, and during the past 2 years some of the railroads have found that a screened slag with the fines taken out makes a better ballast than the bank run slag, and, even at a higher price, is the more economical in the end. Demand for slag produced in this manner gradually has increased each year, and at the present time about 60 per cent of the slag produced by the furnaces is sold commercially. During 1923, over one million tons was sold by the slag company, composing approximately 26,000 carloads.

Some of the finest gravel deposits in the United States are located around Montgomery, Ala. Freight rates to the large consuming centers are the same and, in some cases, lower than the freight rates on slag from Birmingham. After a period of years a rate structure for slag was built up, and at the present time covers shipments to all points in the southeastern states. During this time the use of slag was promoted as an equal to gravel or crushed stone when used as a concrete aggregate, and a long series of tests was carried out to prove this equality. Even then engineers did not accept the results, and many questions, such as the effect of the sulphur in the slag on reinforcing steel, were brought up and successfully thrashed out in favor of slag. As a result of this series of tests, slag was found to produce a stronger concrete than either stone or gravel, due to its abrasiveness forming an ideal bond with the mortar. Today it is accepted by all engineers and favored by many on account of the dependability of grading.

In the manufacture of the various sizes of slag, about 10 per cent of the production will pass through the ¼-inch screens and is known as slag sand, having a gradation about the same as a good concrete sand. For a number of years there was only a small market for this size, necessitating storage in large stock piles which were gradually consuming all available storage space. To overcome this investigations were made to find a suitable use for the material. After a series of experiments it was found that this finely crushed material possessed a certain amount of cementing qualities, naturally suggesting the manufacture of concrete products. The demand for the various concrete products was investigated, and it was decided to manufacture concrete brick.

After brick plants in various parts of the country were visited and operators consulted as to the type of machinery, methods of curing, etc., a plant was designed and built with a capacity of 30,000 brick per day and sufficient shed storage for a million face brick. The original plant used a batch mixer and hand tamping machine, but, because of the abrasiveness of slag, tamping was found difficult with these hand machines, and the mixer would work only at half capacity. As a result, a continuous mixer was installed and all machines fitted with power tampers which increased the capacity of the plant, each of

From a paper presented at the fall meeting of the American Iron and Steel institute at New York, Oct. 24. The author is sales manager, Birmingham Slag Co., Birmingham, Ala.

the 12 machines having a capacity of 2000 face brick or 7000 common brick per day. No material is handled by hand, bucket elevators being used to elevate both cement and slag to bins above the mixer. This material is fed to the mixer by gravity, and the concrete in turn is distributed to the hoppers in the rear of the brick machines, which are in batteries of four, by belt conveyors. The concrete is drawn into hand hoppers by the operation of an undercut gate. Ten brick are made at each operation directly on a wooden pallet, and these pallets of brick are removed from the machines, placed in stacks eight high and are wheeled into steam curing rooms, one stack at a time, by a steel-framed buggy with pneumatic tires. The brick are steamed 24 hours, removed from the curing rooms on jack-lift trucks and stacked on the yards for curing until ready for shipment.

Great care is exercised in the selection of material for concrete brick and only Portland cement is used. The slag should be graded so as to obtain a maximum density without impairing the strength of the product, thereby getting a good hard brick with an ideal percentage of absorption. The slag is handled so as to prevent segregation of the material, which would cause alternate batches of coarse and fine slag to go into the mixer. To accomplish this a storage bin was built as an inverted section of a pyramid, and the material dumped into the bin in a conical pile. The material on leaving the bin will recombine and give a consistent gradation.

Little Water Is Used

Mixing should be as thorough as operating conditions will allow. Although it is conceded that a batch mixer gives a better mixed concrete, the variation of the mix in a continuous mixer is so small that it does not vary the compressive strength of the brick to any serious extent. As a semidry mix is used, much care must be taken to see that all water possible goes into the concrete in order to get the maximum strength from the cement used. This mixer is automatic in proportioning the slag and cement, and a check is kept on this through the finished product, to be sure that the proper amount of cement is used per thousand brick.

In the actual making of the brick, the draw-blade type machine has been found to be satisfactory, in that this machine is simple, easily repaired and can be kept in positive alignment. Wooden pallets are placed on the body of the machine, and the blades are drawn forward and a header bar is clamped on the front of the blades to complete the mold. As before mentioned, concrete is drawn from the large hopper in the rear of the machine into the hand hopper by the operator. The material is pulled over the mold and tamping is done by automatic power tampers. These tampers have five feet, each of which tamps two brick, exerting a pressure of one hundred foot pounds at each stroke. Five series of strokes are used in each operation, giving a total pressure of five hundred foot pounds per brick. After the brick are tamped, excess material is cut off with the hand hopper and the common brick are troweled to a smooth surface, removed from the machine and placed in stacks ready for conveying to the curing room.

Face brick are made by supplementing the operation used in the production of common brick. After the concrete is tamped in the mold and the surplus material struck off, a mineral coloring, in powdered form, is sprinkled over the surface and thoroughly worked in with a wooden float. Enough water is added to make the facing plastic. The brick are then troweled with a steel float and another coat of color applied, which is stippled with a rice root brush to make a rough texture, or made into a wire cut by drawing a steel-toothed comb across the face. The face brick are made in several different colors and can be furnished either wire cut or rough texture. Making the face and body of the brick in one operation produces a monolithic product impervious to water.

Bricks Are Steam Cured

All brick are cured in steam rooms, using low pressure saturated steam. This steam enters the room through pipes laid in trenches in the center of the floor. A heat of 125 degrees Fahr. is maintained when common brick are being cured, and 90 degrees Fahr. when face brick are being cured. The brick are allowed to remain in the curing rooms for 24 hours, which is equivalent to about 7 days' air curing and enables the brick to be stacked on the yard immediately after being removed from the curing room. In no case should the temperature go above 90 degrees when face brick are being cured, as any heat above this will cause efflorescence and ruin the product entirely.

From the curing rooms the brick are hauled to the yard on jack-lift trucks, carrying 400 brick at a load, and stacked in rows 15 brick high, 10 brick wide, leaving an air space of about 4 inches between rows to expedite setting. As the cementing qualities of the slag are depended upon for part of the ultimate strength of the brick, no water is added to them after being stored on the yard, because slag sets slowly when kept wet.

Because of the cementing qualities of the slag a much leaner mix can be used than in the production of a concrete brick using sand as the aggregate. It has been found that a 1 to 7 mix by volume is sufficient to give a compressive strength of 2000 pounds per square inch. Even a leaner mix than this can be used if there is ample space available to allow the brick to cure for a greater length of time.

The finished product is a brick of unusual strength, which increases with age and bonds with the mortar, producing a semimonolithic wall, and is used in every type of construction. A concrete brick is not an imitation of clay or shale brick, but is a brick obtained by a different method of manufacture and using different materials. Concrete brick are just as hard and water-proof as clay or shale brick. They bond readily with the mortar and will not break away from the mortar in the wall because of expansion. This is due to the fact that mortar and concrete brick are composed of ingredients so nearly alike that the coefficient of expansion is practically the same. Because of the fact that they are not burned, no deformities occur from uneven distribution of heat, as is the case with a clay or a shale brick, and a concrete brick once made true remains true throughout. Although these brick are manufactured in the heart of one of the best clay brick deposits in the South, and in the midst of the coal fields, the demand for them has steadily increased since operations were started. The market price of concrete brick in the Birmingham district at the present time is $12.50 per thousand for common brick and from $22.50 to $33.50 per thousand for face brick. The market price of the concrete common brick is about the same as the market price of the clay common brick, but the price of the concrete face brick, in most instances, is lower than either that of the clay or the shale face brick.

Make More Iron Doors

The department of commerce announces that, according to reports for the biennial census of manufactures, 1923, the establishments engaged primarily in the manufacture of iron and steel doors and shutters in that year reported such products valued at $14,077,428, with other classes of products valued at $1,289,683, making a total of $15,367,111.

In addition, doors and shutters were manufactured to some extent as secondary products. The value of these products thus made outside the industry proper in 1921 was $386,457, equal to 3 per cent of the total value of products reported for the industry proper.

Determines Composition of Slag

Investigation Discloses That Blast Furnace Slags Actually Contain 21 Constituents —How Components Go Into Solution and What Effect Varying Amounts of These Have on Physical and Chemical Properties Are Discussed

BY RICHARD S. McCAFFERY

RESEARCH work to determine the physical properties of blast furnace slags has been carried on for some time by the metallurgical laboratory of the University of Wisconsin. To simplify the problem in the beginning only those slags composed of silica, alumina and lime were considered; but when the work was extended to include slags containing magnesia, as well as the foregoing three constituents models were made to represent the slag composed of four constituents, as it was no longer possible to represent satisfactorily a four component system by means of a drawing in a plane and all blast furnace slags contain some magnesia.

Although blast furnace slags are composed ultimately of silica, alumina, lime, and magnesia, they are actually composed of compounds of these substances, some containing two, some three and some four of these ultimate constituents. In all, there are 17 compounds of silica, alumina, lime, and magnesia that enter into the composition of slags, in addition to the ultimate constituents themselves, or a total of 21 as shown in the accompanying table, so that actually any slag may contain one, two, three, or four of these compounds or ultimate constituents.

List of the Components of Slag

1.	Cristobalite ..... SiO_2
2.	Calcium bisilicate ..... CaO, SiO_2
3.	Anorthite ..... CaO, Al_2O_3, $2SiO_2$
4.	Clino-enstatite ..... MgO, SiO_2
5.	Diopside ..... CaO, MgO, $2SiO_2$
6.	Cordierite ..... $2MgO$, $2Al_2O_3$ $5SiO_2$
7.	Sillimanite ..... Al_2O_3, SiO_2
8.	Spinel ..... MgO, Al_2O_3
9.	Corundum ..... Al_2O_3
10.	Gehlenite ..... $2CaO$, Al_2O_3 SiO_2
11.	Madisonite (new) $2CaO$, $2MgO$, Al_2O_3, $3SiO_2$
12.	Forsterite ..... $2MgO$, SiO_2
13.	Akermanite ..... $2CaO$, MgO, $2SiO_2$
14.	Monticellite ..... CaO, MgO, SiO_2
15.	Periclase ..... MgO
16.	Calcium orthosilicate ..... $2CaO$, SiO_2
17.	Tricalcium disilicate ..... $3CaO$, $2SiO_2$
18.	Tricalcium aluminate ..... $3CaO$, Al_2O_3
19.	Pentacalcium trialuminate ..$5CaO$, $3Al_2O_3$
20.	Calcium aluminate ..... CaO, Al_2O_3
21.	Tricalcium pentaluminate ..$3CaO$, 5 Al_2O_3

Of the many possible types of solution, it happens that these 21 components form among themselves, solutions of only two types. One, and by far the commonest type in slags, is like the solution formed by metallic lead and tin, with a eutectic at some intermediate composition, and the other type is like the solution of gold and silver which forms an isomorphous series. In the silica, alumina, lime, magnesia system, there are only two isomorphous series, the diopside—clino-enstatite or pyroxene series, and the akermanite—gehlenite or melilite series. All the others are of the eutectic forming type.

Space Models Constructed

The system of four components, the sum of which is 100 per cent, cannot be represented by drawings on a plane, so that it was necessary to construct space models. The situation was somewhat simplified by the fact that all the binary systems in the four component systems CaO, MgO, Al_2O_3, SiO_2, formed either simply eutectic mixtures or isomorphous solutions. It is possible to use the equilateral tetrahedron to represent a four component system, for in such a solid, if perpendiculars are drawn from any point within to the four sides, the sum of these perpendiculars will be a constant.

Using then the equilateral tetrahedron to represent the four component system CaO, MgO, Al_2O_3, SiO_2, the faces were constructed from the equilibria of the three component systems involved, and the interior of the tetrahedron was divided into tetrahedra of four component systems, the ternary eutectics were located on the faces of these interior tetrahedra and the quaternary eutectics were located inside each tetrahedron. The complete model shows the spaces of composition of primary crystallization and from the location of the interior tetrahedra faces the approximate mineral composition of a slag of any composition can be determined. An accompanying drawing shows the structure of the model.

Many interesting things were brought out by a study of the CaO, MgO, Al_2O_3, SiO_2 model. For example, the authorities say that in considering blast furnace slags, the chemical equivalent in CaO, of the MgO present may be added to the CaO present. This is totally wrong, for any slag which contains MgO has as a part of its composition some of the magnesia minerals present, such as pyroxene, fosterite, akermanite, spinel or cordierite. The physical properties of these magnesia minerals are different from the nonmagnesia minerals in slags, say calcium bisilicate, anorthite, gehlenite, calcium monosilicate or calcium sesquisilicate and it is immediately recognized that the addition of the chemical equivalent of the MgO to the CaO is incorrect.

Another point brought out by a study of the CaO, MgO, Al_2O_3, SiO_2 model is that there are certain slag compositions which if used in the blast furnace give operating results that vary greatly if there is a comparatively small change in the ultimate composition of the slags. The reason for this is that any slag is composed of four and only four components or mineral entities and the physical properties of these components determine the physical properties of the slag. These slags are of such composition that a slight variation in the percentage of one or more constituents present, will change greatly the blast furnace operating results on slags, the composition of which is on or near the boundary plane of the smaller internal tetrahedra. Being on or near this plane, a small ultimate composition change would vary considerably the mineral composition of the slag and in so doing would vary its properties.

To investigate the location of typical slags in the space model, another model on a larger scale was constructed taking in that part of the larger system that included the composition of all blast furnace slags and in this model were plotted a large number of American, English, French, German and Swedish blast furnace slags that were chosen to show the greatest possible variation in composition.

The slags range themselves roughly into three groups; the silica, calcium bisilicate anorthite pyroxene type of charcoal furnace slag, the bisilicate anorthite gehlenite mellitite type of coke furnace slag and the gehlenite, anorthite akermanite montecellite type of coke furnace slag. These three types, although they slightly overlap, showed decided groupings into the one charcoal furnace type and the two coke furnace types.

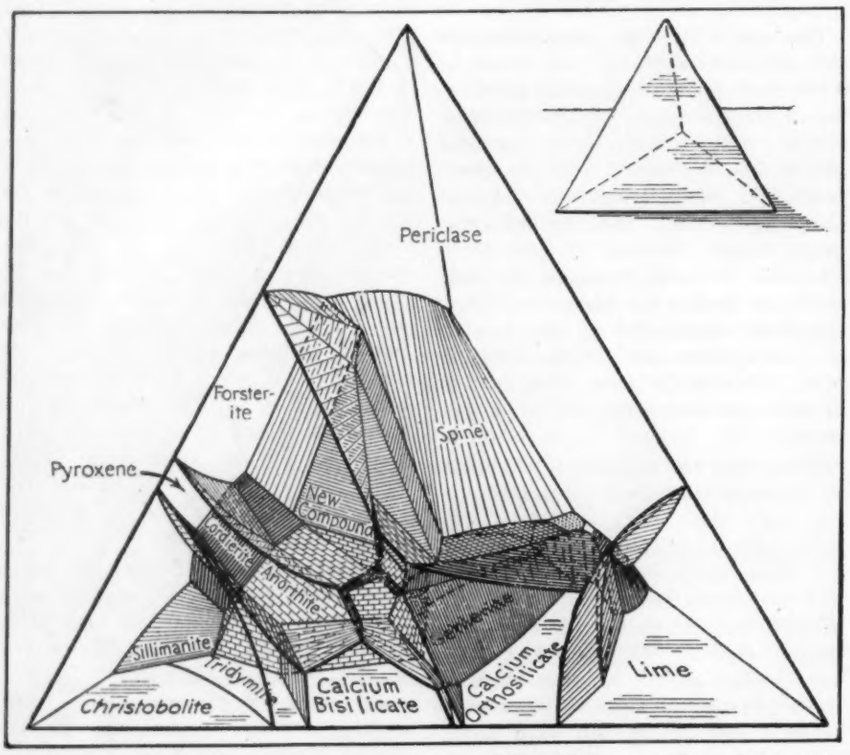
The space model demonstrated forcibly the fallacy of the old idea, that the addition or subtraction of CaO or MgO or Al_2O_3 or SiO_2 to a slag had the effect of changing the properties of the slag because the properties of these four primary components were changed, where as a matter of fact a slag consists

---

From a paper presented before the American Iron and Steel institute, New York, Oct. 24, 1924. The author, Richard S. McCaffery, is professor of metallurgy, University of Wisconsin, Madison, Wis.

almost entirely of compounds of these primary components, and it is really the variation of the properties of these compounds that changes the properties of the slag. As the properties of the ultimate components are radically different from the properties of the compounds, the disastrous result of reasoning based on the old notion is made evident.

As a result of the study of the constitution of blast furnace slags, we believe we have at last given a scientific explanation of their constitution that fits in with known facts, that is in accordance with the latest ideas of physical chemistry, and which affords an easy and logical explanation for many things that had not been satisfactorily explained before. It also harmonizes many of the observations that had been made by furnacemen, which seemed till now diametrically opposed to each other.



DRAWING SHOWING MODEL OF THE FOUR COMPONENT SYSTEM, SILICA, ALUMINA, LIME AND MAGNESIA

The fusibility or melting points of slags, the viscosity, the specific heat, the latent heat of formation and the solubility for sulphur are all properties which can be determined in the laboratory and if known quantitatively for those compounds or mineral entities which compose slags, would afford the blast furnace operator the exact data on which to base his slag composition and afford means for the accurate determination of the most economic operation of the process.

Thirty-one factories in Bridgeport, Conn., reporting to the Manufacturers' association, combined, in the week of Oct. 4 employed 13,520 workers, this being 53.4 per cent of the total number of 25,318 employed when the plants are operating at capacity. Employment dropped from 57.6 per cent for the week of June 7, 1924 to 53.7 per cent for the week of July 12, and the figure since has been below 54 per cent.

Scrap Trade Becomes Real Industry

(*Concluded from Page* 1158)

chine shops are installing more automatic machines daily, running at high speeds and turning out more bushy turnings for the dealer to handle.

Scrap is no longer scrap, it is fast becoming a manufacture. A modern yard capable of preparing scrap to meet mill requirements represents outlays running into hundreds of thousands of dollars, starting with trackage, locomotives, overhead and locomotive cranes, derricks, shears, compressing machines, turning crushers, magneto machine shops, and last but not least, torching outfits with their generators and equipments.

The scrap market is not unlike the stock market in that it anticipates improvements and depressions sometimes by several months. It is a common occurrence to see scrap prices rising while finished steel is still falling, but it invariably predicts an improvement in demand which eventually means higher prices for finished steel. Likewise scrap will often begin to fall before finished material has stopped advancing. There are times when this is not borne out, and the rise in scrap proves to be a false start, but it is usually a pretty good barometer.

The larger dealers or operators likewise go long and sell short, so that when the market turns weak and the mills continue buying, brokers with orders give an outlet to the railroads and producers. When the market reaches a point where the mills will not buy at all, as always happens during periods of depression, the dealers purchase to store for the long pull.

Over a period of twenty years prior to the war, the yearly average variaton in the price of heavy steel melting scrap represented $4.67, while since the war (eliminating the war years) the average variation has been $7.25. The average pre-war price of scrap was $14, the post-war average, $17.85. This is based on average monthly quotations, and does not represent the average selling price which would be much higher, as the big tonnages are all sold on the high market when the demand is great, while very little material is sold at low points.

Engineering Foundation at End of Decade

Progress made by the Engineering Foundation during the 10 years of its existence is discussed in a report made by Alfred D. Flinn, director of the organization. Stimulated by the needs of the war and provided with gifts of Ambrose Swasey aggregating $500,000, the Foundation has set in motion numerous currents of activity which are increasing world knowledge in engineering, science and industry. Co-operation with the National Research council and with large industrial enterprises is being carried out and important investigations have been stimulated in this and other countries.

Total income of the Foundation for nine years was $169,000. Expenditures have been as follows: Aid in establishing National Research council, $10,500; support of division of engineering and industrial research of the National Research council, $26,000; research subjects, $57,000; promotion of research, $17,200; administrative expenses, $24,300; making a total of $135,000. A reserve of $34,600 was accumulated. During the past year, 190 leading engineers in 27 cities have accepted invitations to serve as informal local representatives. They include one state governor, many past and present officers of national and local societies, and corporation executives.

Outlines Blast Furnace Practice

Stacks in Birmingham District Follow General Lines of Construction—All Raw Materials Lie Within Consuming Area—Ore Has Low Metallic Content, Consequently Slag Production Is High

BY R. H. LEDBETTER

THE Birmingham district includes the territory furnishing raw materials to the iron and steel industries of Birmingham and vicinity, an area about 60 miles long and 30 miles wide. The striking economic feature of this district is the location of the iron ore deposits and coking coals on opposite sides of the valley, approximately 6 miles apart, with outcroppings of a good dolomite, which fulfills all requirements for a fluxing stone.

The iron ores used in the furnaces of the district consist largely of hard red hematites, with a small percentage of soft red hematites and brown hematites or limonites. The following are typical analyses of Big seam ore, which constitutes the principal supply:

	Ishkooda per cent	Wenonah per cent	Muscoda per cent
Moisture	1.00	1.00	1.00
Iron	36.82	37.10	35.28
Silica	17.90	13.18	10.38
Alumina	3.03	3.05	3.12
Lime	13.67	16.02	19.35
Manganese	0.17	0.16	0.16
Phosphorus	0.37	0.36	0.30

To the northeast of Birmingham, a limited tonnage of ore is being mined from the Irondale seam. A typical analysis of this ore shows: iron 33.67, silica 22.54, alumina 5.00, lime 12.89 per cent.

Coking coals of the Birmingham district are limited to the Warrior field, which lies on the northwest side of the district. The principal coal seams of this field are the Pratt and Mary Lee, or Big seam, which occurs 500 to 600 feet below the former. The Pratt seam furnishes approximately 70 per cent of the total coking coal used in coking operations of the district. To produce a good blast furnace coke of desirable ash content, it is necessary to wash practically all the coals. A representative washed Pratt coal will show about the following analysis: volatile matter 30.8, fixed carbon 63.9, ash 5.3, sulphur 1.25.

Limestone Is Close at Hand

Stone mainly used for flux is the dolomite which outcrops extensively in the valley. The stone, as it occurs, is a pure dolomite, carbonate of calcium and magnesium, requiring no preparation other than crushing and screening. At two of the blast furnace plants it is quarried, not exceeding one mile from the stockhouse charging bins. While limestone is plentiful in the district, dolomite is preferred by most furnace operators, particularly when making basic iron. With the lower hearth temperatures necessary to produce basic and low silicon iron, the slags are thinner and more easily handled when they contain from 4 to 6 per cent magnesium oxide than when the base is all calcium.

Twelve years ago fully 90 per cent of all blast furnace coke produced in the district was made in the beehive oven. Since that time the regenerative by-product oven has replaced the wasteful beehive. Three by-product coke plants today are operated by iron producers, and a fourth is coking coal for a three-furnace plant, which has recently abandoned its beehive ovens.

In the district are 24 operative blast furnaces, with a total annual capacity of 2,735,000 gross tons of iron. The Tennessee Coal, Iron & Railroad Co. has six modern skip-filled and six hand-filled furnaces of a combined annual capacity of 1,500,000 tons of basic and foundry irons. The Republic Iron & Steel Co., operating exclusively on merchant iron, has three furnaces, the total rated capacity of which is 325,000 tons. Sloss-Sheffield Steel & Iron Co., with two hand-filled and two skip-filled furnaces, has a capacity of 350,000 tons. The Woodard Iron Co. has five furnaces, four modern mechanically-filled and one small hand-filled, with a total rating of 550,000 tons of basic and foundry grades. The furnaces of the district vary in size from the smallest of approximately 10,000 cubic feet content to the largest of 31,235 cubic feet, the latter being the content of the recently rebuilt No. 1 Ensley stack of the Tennessee Coal, Iron & Railroad Co.

There is nothing unusual about the construction of any of the southern blast furnaces. On account of the low metallic content of the ore charge, they produce more than 2300 pounds of slag for each gross ton of iron. This excessively high slag volume is destructive to hearth linings, and as a result frequent iron and cinder breakouts have occurred, a number of which have been serious. However, in recent years this has been largely overcome by stronger jackets, better protected and cooled. At a number of the furnaces, particularly those of the Tennessee Coal, Iron & Railroad Co., the hearth well has been done away with. The jackets are made of cast steel segments 4 to 5 inches thick, with cast iron cooling plates on the inside extending the full depth of the hearth jackets. A number of the furnaces are constructed with cast iron hearth jacket, the segments usually being linked together. When cooling is necessary, this type usually is sprayed.

Two Bosh Types Used

The tuyere zone is protected with cast iron or steel segments completely covering this area. On account of the cutting action of the slag, no furnaces in this district are constructed with exposed brick in this section. It is often necessary to maintain a constant spray of water to prevent overheating. Two types of bosh construction are followed; one is the usual block bosh, consisting of from four to eight rows of copper cooling plates inserted into cast iron housings, the other of one to three rows of copper plates immediately above the tuyere jackets, the remaining portion of the bosh being housed with steel plate ½ to 1 inch thick, which is cooled either with a series of water sprays or by cast iron inside cooling plates extending to the furnace mantle. With one or two exceptions, the larger furnaces have adopted the former type. The "petticoat jacket," as this steel protection is called, proves satisfactory for the smaller furnaces. The mantles are constructed of heavy reinforced cast iron sections, fabricated I-beams or channels, or both. The furnace shells are of the usual construction.

There are no so-called "thin-lined" furnaces in the district. No. 1 furnace of the Ensley group, Tennessee Coal, Iron & Railroad Co., was rebuilt in 1911 as a thin-lined stack, but was dismantled in 1921, however, and replaced by the present furnace now in operation. A number of furnaces have one or more rows of copper cooling plates above the mantle but this construction is not general.

On account of the excessive abrasive action of the southern furnace charge, attributable largely to the refractory

From a paper presented at the fall meeting of the American Iron and Steel institute at New York, Oct. 24. The author is superintendent of blast furnaces, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

hard red ores, the top brick soon suffer unless protected. A number of types of stock line protectors are in service. The one generally used, and probably best adapted to local conditions, consists of a heavy cylindrical cast iron ring, 3 inches thick and 7 feet high, reinforced with ¾-inch plate on the outside. They are supported by brackets fastened to the shell or rods from the tunnel ring or top cone.

Few Furnaces Hand Filled

Nine of the 24 furnaces are hand-filled, and are provided with only a single large bell without gas seal. The size of the bell varies with the diameter at the stock line, the usual practice being to make the bell of about 4 feet smaller diameter than the furnace at the stock line. The angle of this bell is usually 45 degrees. The cubical capacity of the receiving hoppers is designed to hold one complete charge of from 16,000 to 22,000 pounds of ore, coke and stone.

Of the 15 mechanically-filled furnaces, 13 are equipped either with the Brown or McKee-type top modified to suit local conditions. The top constructed by the Tennessee Coal, Iron & Railroad Co. and in use on all of its six skip-filled furnaces has given excellent results. Nos. 2 and 3 Ensley furnace each have produced more than a million tons of iron on a lining. No. 2 Ensley furnace, now in blast, has produced on its present campaign 960,000 tons, and promises to cross the million ton mark before the first of the coming year. No. 3 Ensley, at present in blast and in good condition, has made more than 750,000 tons on its lining. This top consists of a stationary receiving hopper, to a revolving section of which is attached a distributor spout, this section being driven by a crank from the shaft of a sheave wheel carrying skip cables. It is equipped with a small bell of a diameter of 4 feet 9¼ inches immediately above the revolving section, this bell acting as a gas seal and closing only when the large bell is lowered. The diameter of the large bells on five of the six furnaces is 12 feet, that of the No. 1 furnace being 13 feet. The distributor can be adjusted for any degree of travel by changing the stroke of the driving mechanism. It is at present adjusted for a travel of 64 degrees for each trip of the skip car from pit to top. Six skips constitute a coke unit. This gives an overlap of 24 degrees for a complete charge of fuel, and since 10 skips constitute a complete charge, it requires 90 trips or nine full charges to bring the distributor to its original starting point. Both bells are operated by the skip hoist tender, the large by water and the small ones by steam.

Many types of stoves are in use; the two-pass, the three-pass and the four-pass all being in service. The majority of the older hand-filled furnaces are equipped with the four-pass stove of the Whitwell-type. The 12 stoves of the Republic Iron & Steel Co. at Thomas are three-pass central combustion chamber of the Massick and Crooke design. Twenty of the 27 stoves of the Ensley group, Tennessee Coal, Iron & Railroad Co., are three-pass central combustion chamber designed by McClure. The remaining seven are two-pass, four of which are central combustion chamber, and three, side combustion chamber. Of the 27 stoves at Ensley, the smallest, a 20 x 85-foot 2-pass central combustion chamber stove, has a heating surface of approximately 46,000 square feet and the largest, a 25 x 110-foot two-pass side combustion chamber stove with 6-inch checkers, has a total heating surface of 90,000 square feet. The blast temperatures maintained in this district are probably higher than in other iron producing districts of the country. At the different plants, it ranges from 1100 to 1400 degrees. The records covering a period of more than a year show an average blast temperature of 1170 degrees for the group of Ensley stacks operating on low silicon iron.

No gas blowing engines are used in the district. Twenty-one of the 24 furnaces are blown with reciprocating engines, principally of the vertical long cross-head type. Three furnaces of the Ensley group are supplied with blast from two turbo blowers operating on exhaust steam from reciprocating engines, and one blower driven by high pressure steam, superheated. Barometric condensers are used with the low pressure blowers, while the exhaust from turbine using superheated steam is condensed by a surface condenser and the condensate discharged into heater and used for boiler feed water. The steam for prime movers is generated almost exclusively by vertical water-tube boilers, the fuel for which is supplied by blast furnace gas, supplemented by hand firing of coal and at some plants by the use of by-product coke oven gas. At the Ensley boiler plant, the largest in the district, there are six 834 horsepower boilers equipped for using blast furnace gas or pulverized coal, as may be most convenient.

Furnace Gas Is Cleaned

In recent years more attention has been paid to the cleaning of blast furnace gas. Demand for higher blast temperatures, greater wind volumes and finer crushing of ores have resulted in dirtier gas. In addition to the original dust catchers, a number of the furnaces have gone further into the cleaning of their gas, particularly that portion which is used in the furnace stoves.

The flue dust production of the furnaces will average approximately 135 pounds per ton of iron. A month's average analysis of the dust produced by the Ensley group shows iron 26.02, silica 12.21, alumina 2.94, lime 12.16, carbon 23.59 per cent. The low metallic iron and high carbon content of the dust prohibits sintering by any of the present known commercial systems. There is, however, one sintering plant operating in the state, at which plant a mixture of flue dust and iron pyrites is sintered. The dust from the dust catchers and the dry cleaners usually is carted away or loaded in railroad cars and wasted with plant refuse. Where washers are used, it usually is removed from the settling basins by a locomotive crane and disposed of in the same manner.

No Bessemer Ores Mined

Fifteen of the 24 furnaces normally produce iron for the market, all of which is cast in sand beds. A large percentage of this tonnage is disposed of to nearby plants and used in the production of high pressure water pipe, sanitary pipe and fittings, stoves and miscellaneous castings. Eight of the nine remaining furnaces produce basic or low silicon iron, which is handled as hot metal directly to steel works for conversion into open-hearth steel. One furnace usually is operated on ferromanganese, low phosphorus or special iron to fill the needs of the steel works.

No ores are available in the Birmingham district in commercial quantities for the manufacture of bessemer pig iron. The average phosphorus content of the red hematites, which constitute 90 per cent of the iron ore supply, shows 0.3 per cent, and since it requires approximately 2.7 tons of ore for 1 ton of pig iron, the resultant phosphorus content in the iron is about 0.8 per cent. For many years, bessemer and low phosphorus iron were purchased from other districts for the manufacture of ingot molds and special castings. A few years ago a method was developed for the manufacture of low phosphorus iron without the use of iron ore. This is done by charging into the furnace steel scrap, coke, gravel, dolomite and a small quantity of manganese ore. The steel scrap of the charge consists mainly of rail ends and bloom crops, with a small percentage of miscellaneous plate and rod scrap. The following is a typical furnace charge when operating on this iron: Steel, 12,600 pounds, coke 5700, dolomite 4600, river gravel 1800. The gravel is added to furnish the acid to permit the use of additional dolomite to increase the slag volume for the absorption of sulphur in the coke. A high-

(*Concluded on Page* 1171)

Joins Ranks of Strip Producers

Completion of New Open-Hearth Capacity Affords Ohio Producer Control Over Raw Materials—Blooming Mill Hydraulic System Is Unique—No Cooling Bed Provided at Hot Strip Mill—Description of New Plant

BY JOHN D. KNOX

CONTROL over raw materials and over the manufacturing processes of semifinished material used in the production of finished steel commodities is to be desired and during recent years the move in this direction among manufacturers of various finished steel products has been gaining ground. A finishing mill depending upon outside sources for its supply of billets or slabs usually is compelled to carry a large tonnage of semifinished steel in its stock yard in order to be in a position to execute specifications within a reasonably short period. Aside from the advantage of not having large sums of money tied up in stock tonnages the finished steel producer whose plants include blast furnaces, open hearths and semifinishing mills has control over the chemical analyses of his steel which is a matter of importance in the manufacture of high-grade sheets and strip steel.

Consumers of high-grade sheets and strip steel are more and more recognizing quality as paramount, being spurred on by demand, and the requirement in this connection has compelled manufacturers of these two products to exercise undue care not only in the rolling processes of the steel but also in the selection of raw materials. If quality is not in the steel at the start, however, no amount of rolling will cause it to be imparted. The trail leads back to the open hearth if control is to be had in chemical analysis.

The author is technical editorial representative at Cleveland of IRON TRADE REVIEW.

Fifty years ago the Otis Steel Co., then known as the Otis Iron & Steel Co., engaged in the steel business as a producer of plates, bar steel and forgings. Its original plant, now identified as the Lakeside works, fronted 1500 feet on Lake Erie and included four open hearths, four trains of rolls and a forging department. Later a small bessemer converter was added and the company engaged in the steel casting business. This particular plant occupies about 22 acres.

Plate Capacity Is Added

Plans were laid about 1912 for the expansion of its plate rolling capacity and approximately 200 acres of land on the Cuyahoga river in the south eastern section of Cleveland, served by the B. & O. and Wheeling & Lake Erie railroads were purchased. Two years later a modern sheared plate mill and four jobbing mills for the production of light plates and sheets were placed in operation. During October 1919, the Otis company acquired the holdings of the Cleveland Furnace Co. including an area of 150 acres with an extensive frontage on the Cuyahoga river and bordering on its property. This plant includes two modern blast furnaces with ore docks and machinery for handling ore and coke and 100 by-product coke ovens. The property owned by the Otis company along the Cuyahoga river includes 250 acres of unexploited land which is ample to provide for future expansion for years to come.

To round out its range of gages and sizes of sheets the company built eight sheet mills at the Riverside division, production having started in 1921. A description of this installation was presented in the February 23, 1922 issue of IRON TRADE REVIEW. The next logical step to bridge the gap from the production of finished products was the installation of steelmaking facilities and a blooming and sheet bar mill and completion of this project recently has materialized. With its present holdings, therefore, the company has within its power of control all semifinished products necessary for the manufacture of sheets, strip steel and plates.

Initial operation of the open hearths and blooming mill began during January 1924. The buildings housing the

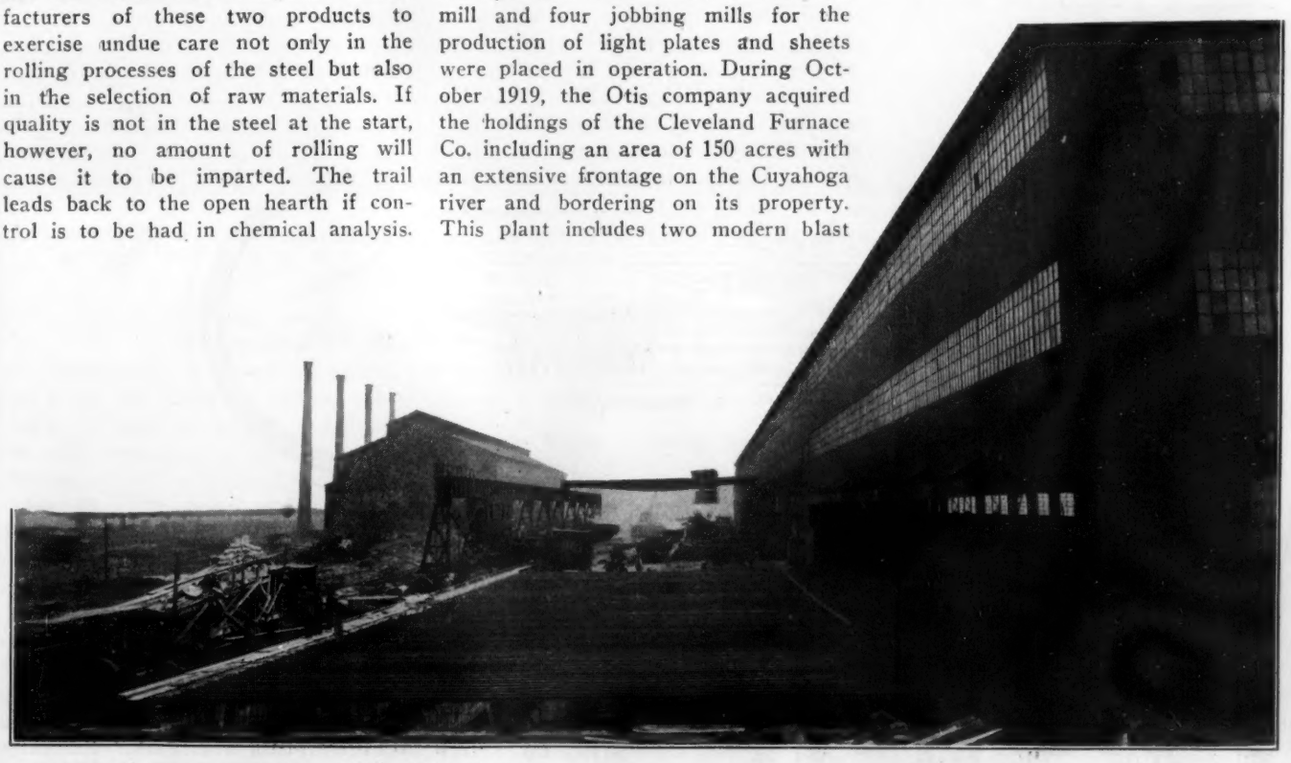


FIG. 1—SHEET BAR COOLING BED AND SLAB YARD AT THE NEW BLOOMING AND SEMIFINISHING MILLS OF THE OTIS STEEL CO., CLEVELAND. THE OPEN-HEARTH PLANT IS SHOWN IN THE DISTANCE

FIG. 2—40-INCH REVERSIBLE BLOOMING MILL AT THE RIVERSIDE DIVISION OF THE OTIS STEEL CO. WHICH IS DESIGNED TO PRODUCE 60,000 TONS OF SLABS A MONTH. FIG. 4—CHARGING FLOOR AT THE STEELWORKS. FOUR 100-TON OPEN HEARTHS ARE BUILT AT PRESENT BUT FUTURE EXTENSION WILL INCLUDE 10 ADDITIONAL UNITS

steel plant and semifinished department are located in close proximity to the company's blast furnace property, being separated only by the tracks of the Newburg & South Shore and the Cleveland Belt & Terminal railroads. Four stationary open hearths of 100-ton capacity each comprise the steelmaking equipment at present although future plans call for the extension of this department to include 14 units whenever conditions warrant. The present installation is housed in a building 163½ x 399 feet and is served by a 100-ton traveling crane. Hot metal from the blast furnaces is brought into the building over a track which extends the entire length of the charging floor along one side. Scrap and other material for the furnaces is handled in the usual type charging cars, each being designed to carry four boxes.

Coke Gas To Be Used

Ample space is provided for the storage of the various grades of scrap used in the open-hearth charge and this material is unloaded from standard railroad cars onto stock pile and from the latter into the charging boxes by a yard crane equipped with an electric magnet. All raw materials are brought from yard level to the charging floor of the open hearth over standard gage tracks. Charging of the furnaces is accomplished by a 7½-ton low type charging machine. Under present practice the open hearths are fired with the fuel oil although arrangements later will be made to use coke oven gas. When steelmaking capacity is enlarged

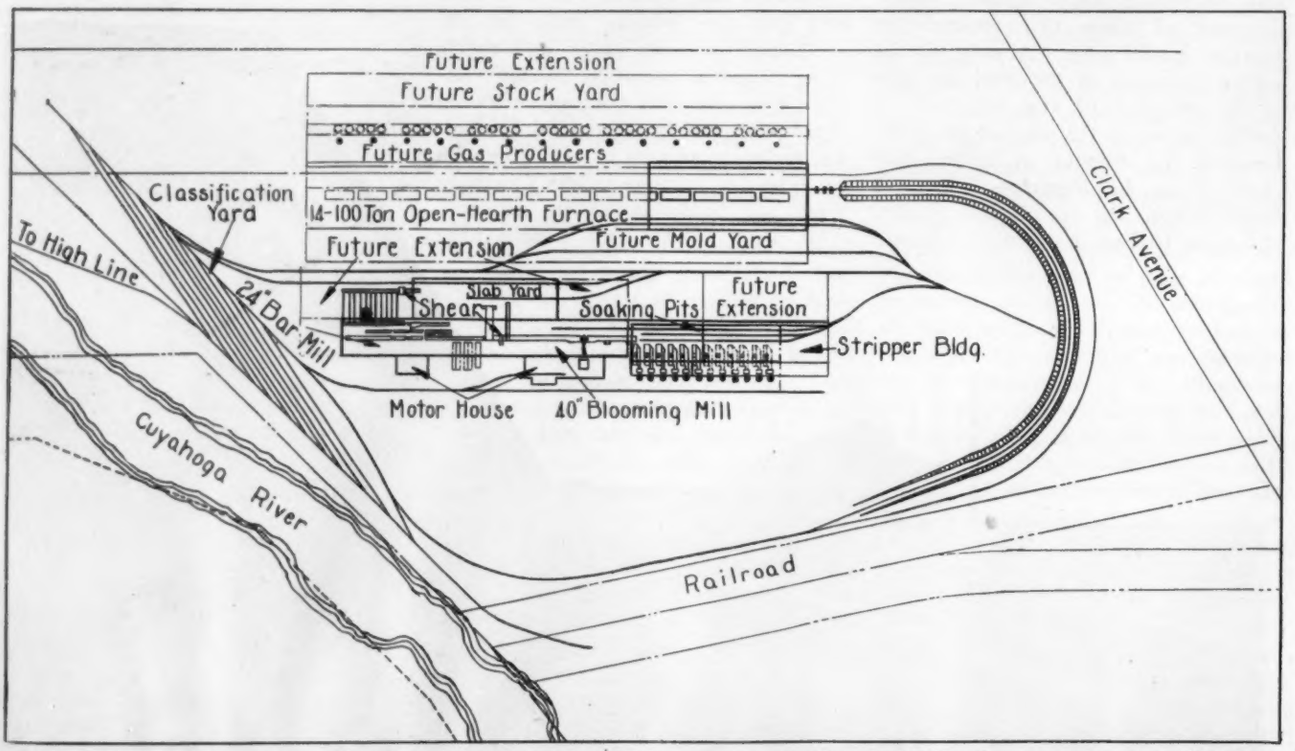


FIG. 3—LAYOUT OF THE NEW STEEL PLANT OF THE OTIS STEEL CO. WHICH INCLUDES FOUR 100-TON OPEN-HEARTHS, A 40-INCH REVERSIBLE BLOOMING MILL AND A 24-INCH 3-STAND SHEET BAR MILL. AMPLE SPACE IS AVAILABLE FOR FUTURE EXTENSION

the extension program calls for the installation of gas producers, three for each furnace.

Brick Stacks Provided

Fuel oil is stored in a steel constructed tank of 55,500 barrel capacity. Waste gases from the furnaces pass through water-cooled straight flue valves into individual brick constructed stacks. This material was used for building the stacks by reason of its being more economical than plate construction based upon the diameter and the height. A jib crane is provided at the rear of each furnace. Cast-iron thimbles are used for slag collection.

The heats are tapped into 120-ton ladles which rest on cast steel standards. After a cast the ladles are spotted over a train of ingot molds by a 175-ton ladle crane and the steel poured in the usual manner. Two sizes of ingots are molded, 22 x 24 inches and 24 x 28 inches. A pit is provided in the north end of the pouring bay for relining the ladles.

The stripper, soaking pit, blooming and bar mill departments are housed in a building, 1225 feet long, which parallels the open-hearth structure on the east. Six soaking pits with a capacity for 12 ingots each are provided. The pits are fired with coke oven gas and are spanned by a 150-ton stripper and a 10-ton crane. Ingots from the soaking pits are delivered to the approach table leading to the blooming mill by an electrically operated ingot chariot. The 40-inch blooming mill is of the two-high reversible type and while it is designed to roll blooms, billets and slabs in the usual sizes, the output is confined to billets and slabs to meet the company's requirement at the strip, sheet and plate mills. The blooming mill is equipped with hydraulically operated manipulators, both at the front and at the rear. It is driven by a motor designed to deliver 1,500,000 foot-pounds of torque at 1 foot radius and equipped with two armatures each developing 3750 horsepower. The mill is designed to produce between 60,000 to 70,000 tons of semifinished steel monthly.

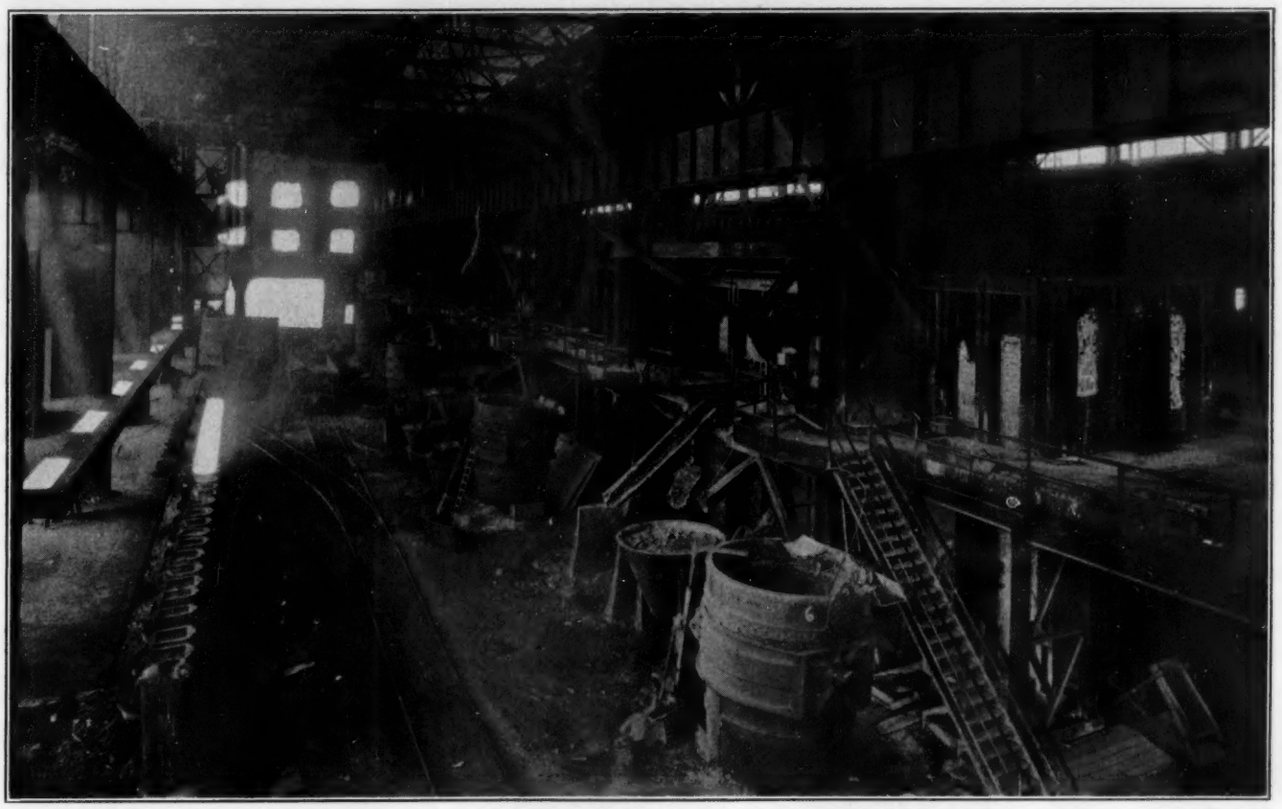


FIG. 5—POURING BAY IN THE OPEN-HEARTH DEPARTMENT. STEEL IS CAST INTO 100-TON LADLES AND THEN MOLDED EITHER INTO 22 X 24 OR 24 X 28-INCH INGOTS.. EACH FURNACE IS EQUIPPED AT THE REAR WITH A 10-TON ELECTRICALLY OPERATED JIB CRANE

Single Pump Governs Supply

An outstanding feature of the blooming mill installation is that a centrifugal pump is used to supply water to the hydraulic system employed for operating the manipulators and slab and billet shear. The pump is a 5-stage, 8-inch centrifugal unit designed to deliver 1500 gallons of water per minute at 550 pounds pressure; it is direct connected to a 700-horsepower, 2-pole motor of special construction. As far as can be learned this is the only blooming mill hydraulic installation in this country which depends solely upon a pump of this type for its water supply. City water is used in the hydraulic system to prevent any cutting action on the valves. Little wastage occurs. The water from the operating cylinders is returned to two large tanks and thence to the system as needed.

Hydraulic Shear Crops Slabs

An 800-ton hydraulic shear spans the delivery table of the blooming mill and as each end of the slabs are severed the crops drop onto a conveyor which discharges them into a car on the exterior of the building. The shear is equipped with three 38-inch diameter pistons and after a cut is made the shear blade stops on a ½-inch lap. Immediately beyond the shear an electrically-operated kick-off pushes the slabs onto a cooling bed which terminates in a piling crib in the slab yard on the outside of the building. The slab yard is served by a 25-ton traveling crane and this is used piling the steel against future requirements or loading it into cars for immediately delivery to the sheet, plate or strip mills as the case may be.

In line with the blooming mill, but about 440 feet away, is a 24-inch bar mill. A chipping yard is located opposite the table connecting the two mills. Here any defects in the steel are re-

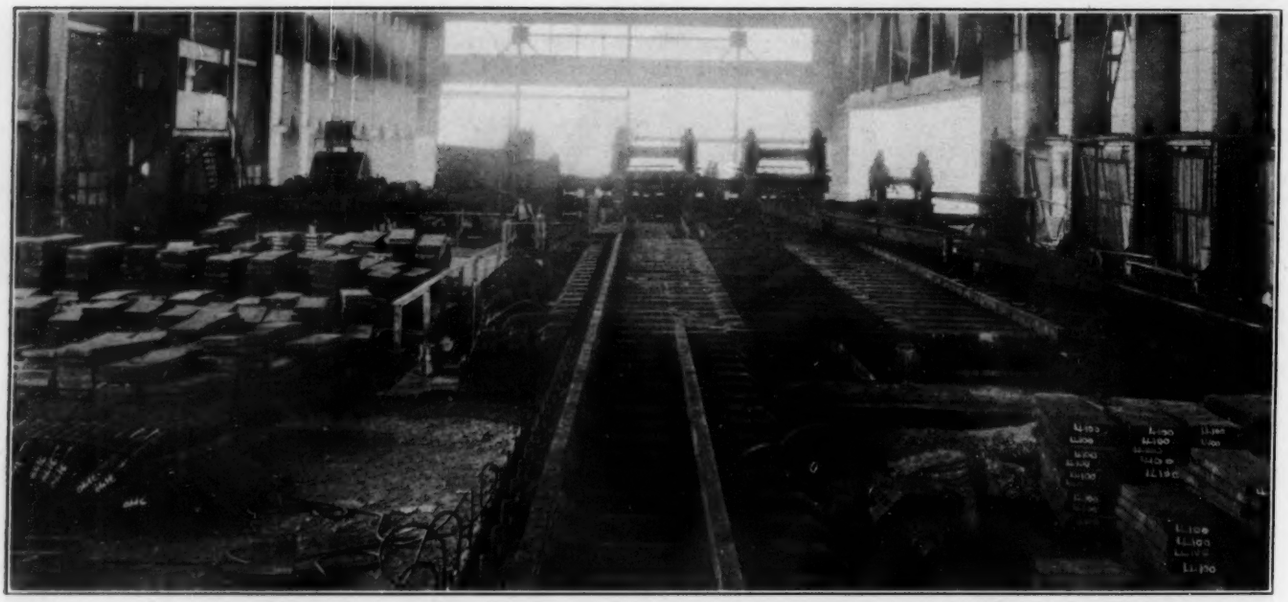


FIG. 6—APPROACH TABLE LEADING TO THE 24-INCH SHEET BAR MILL. THIS UNIT INCLUDES TWO STANDS OF 3-HIGH ROLLS SERVED BY TILTING TABLES AND ONE STAND OF 2-HIGH ROLLS. IN THE CHIPPING DEPARTMENT AT THE LEFT. AIR FOR OPERATING THE CHIPPING HAMMERS IS SUPPLIED BY A MANIFOLD PLACED ALONG ONE SIDE AS SHOWN

moved by air-operated chipping hammers. This mill is a three-stand train and is driven by a 3000-horsepower motor. Nos. 1 and 2 stands are equipped with three high rolls and are served by tilting tables on either side; No. 3 stand is fitted with two-high rolls. Paralleling the runout table of the finishing stand is a cooling bed across which the sheet bars are transferred into the open. The extreme end of the cooling bed terminates in a motor-driven roller table which moves the sheet bars in turn to a guillotine type shear where the irregular ends of the bars are trimmed, leaving sections about 30 feet long. These are received in a piling cradle and when a batch has accumulated the sheet bars are loaded into a standard railroad car by a 25-ton crane and taken to the finishing mills for further reduction. Elevated water sprays are arranged along the loading track in the slab and sheet bar yard for cooling the products.

Initial operation of the hot and cold rolled strip departments of the Otis company began during September 1923. The hot strip mill is strictly a continuous installation with all stands arranged in tandem and about 20,000 tons of hot rolled product ranging from 6 to 24⅝ inches wide can be rolled monthly. Two gravity discharge continuous type heating furnaces are pro-

FIG. 7—SIX SOAKING PITS WITH A HOLDING CAPACITY OF 12 INGOTS EACH AND FIRED WITH COKE OVEN GAS SERVE THE BLOOMING MILL. ALL DOORS ARE ELECTRICALLY OPERATED

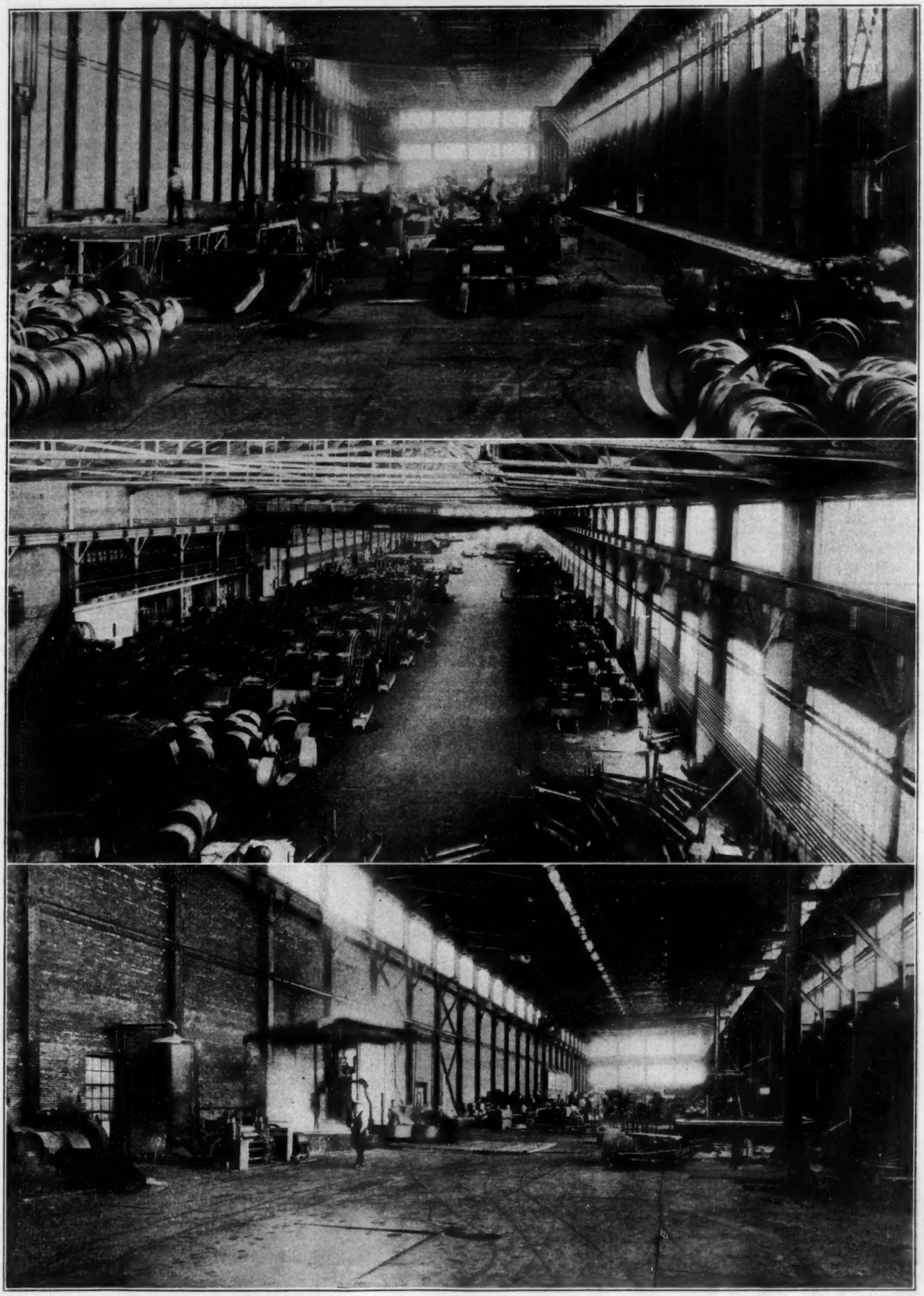


FIG. 8—FINISHING END OF THE HOT STRIP MILL. FIG. 9—GENERAL VIEW OF THE COLD FINISHING DEPARTMENT. FIG. 10—HOT STRIP IN COIL FORM IS RECOILED BY THE MACHINES SHOWN AT THE LEFT AND CLEANED BY A PLUNGER TYPE PICKLING MACHINE. HOT ROLLED FLATS ARE PICKLED IN THE VATS AT THE RIGHT WHICH ARE SERVED BY A MONORAIL HOIST

Makers of Principal Equipment

Buildings	American Bridge Co., New York
16 and 20-inch cold strip mills	Mesta Machine Co., Pittsburgh
12-inch cold strip mill	Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
10-inch cold strip mill	Philadelphia Roll & Machine Co., Philadelphia
40-inch blooming mill, reduction gears, manipulator and 800-ton shear	Mackintosh-Hemphill Co., Pittsburgh
24-inch sheet bar mill	Mackintosh-Hemphill Co., Pittsburgh
Cranes:	
One 175-ton, one 100-ton, two 50-ton, one 25-ton, one 10-ton and one 150-ton stripping	Alliance Machine Co., Alliance, O.
One 40-ton, one 25-ton and three 10-ton	Morgan Engineering Co., Alliance, O.
Hot strip mill	United Engineering & Foundry Co., Pittsburgh
Heating furnaces, two	Alex Laughlin & Co., Pittsburgh
Leveling machine	United Engineering & Foundry Co., Pittsburgh
Leveling machine	McKay Machine Co., Youngstown, O.
Recoiler Shear	Streine Tool & Mfg. Co., New Bremen, O.
Pickling machine	Mesta Machine Co., Pittsburgh
Annealing furnaces	George J. Hagan Co., Pittsburgh
Recording pyrometers	Brown Instrument Co., Philadelphia
Transformers	Allis Chalmers Mfg. Co., Milwaukee
Rversing valves, soaking pits	Wellman-Seaver-Morgan Co., Cleveland
Reversing valves, open hearths	Blaw-Knox Co., Pittsburgh
42-inch roll grinder	United Engineering & Foundry Co., Pittsburgh
Open hearth charging machine, 7½-ton	
Charging boxes	Morgan Engineering Co., Alliance, O.
Motors for blooming, sheet bar and hot strip mill	Wellman-Seaver-Morgan Co., Cleveland

vided and have a heating capacity of about 350 tons of steel each per 24 hours. Slabs are delivered to the hot strip department in railroad cars which enter the building at the southern end. On account of the blooming mill being situated near the hot strip department no effort is made to maintain a large stock of slabs at the hot strip division.

Each heating furnace is equipped at the rear with an electrically-operated pusher which charges cold steel into the furnace and discharges the heated slabs onto a roller table which serves the 24-inch hot strip mill. The roughing mill of the hot mill installation consists of five stands of roughing and two stands of edging rolls, one stand of edging rools being arranged between Nos. 3 and 4 roughing mill and the other between the last stand of the roughing mill and the first stand of the finishing mill. The roughing mill rolls are driven through bevel gearing, main spindle and reduction gears by an 1800-horsepower motor housed in a leanto.

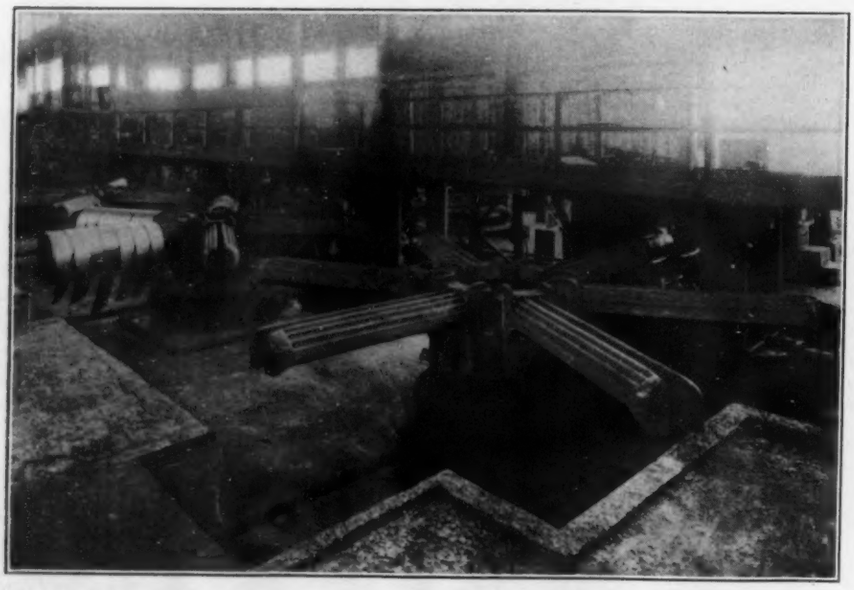


FIG. 11—COOLING WHEELS INSTEAD OF THE USUAL HOT BED SERVE THE HOT STRIP MILL. FOUR REELS IN THE RUNOUT TABLE COIL THE HOT ROLLED PRODUCT AND EJECT IT ONTO THE ARMS OF THE WHEELS

The finishing mill includes six stands of rolls arranged in tandem. Nos. 1, 2 and 3 stands are driven individually by 1500-horsepower motors while the last three stands are driven separately by 1800-horsepower motors. A mechanical device is provided between the finishing stands to cause the strip to bend upwards while in transit and thus prevent the tendency to cobble. A novel feature of the hot mill installation is the absence of a cooling bed. The runout table beyond the last stand of the finishing mill is equipped with three motor-driven reels which automatically receive the strips and wind them into coil form. The coils then are ejected onto a six-arm turnstile, three of which are provided. The speed of the reels may be varied from 500 to 1000 revolutions per minute. The coils are handled from the turnstiles to the finishing department by crane.

Stock Leveled by Rollers

Coils of heavy gage strip are transferred to a heavy duty roller leveling machine installed along one side of the hot finishing department. After passing through five pairs of horizontal rolls the strip is delivered in the flat state by a roller table to power operated shears where it is cut into sections. The shear is equipped at the rear with a stop gage to facilitate the rate of cutting. After a cut is made the section is transferred from the back shear table into a piling cradle. When a sufficient number of sections have accumulated they are removed from the cradle by the crane. Two other roller leveling machines are provided in the hot finishing department for handling stock of relatively light gage. Each is operated by a 10-horsepower motor and is served by electrically-operated shears.

Three recoiling machines are provided for rewinding the coils in the opposite direction so that when subjected to the pickling process effective cleaning will result. One eight-arm pickling machine is installed near the coilers for cleaning the hot rolled product in coil form. The pickling tank is made of brick. Flat stock is pickled, limed and oiled in a series of rectangular tanks which are served by a monorail crane. A surplus supply of acid is stored in a steel tank located on the exterior of the building. Annealing of the product is executed in the usual type boxes. Six furnaces of double compartments and one furnace of four compartments are included in the annealing equipment which is housed along one side

but at the extreme end of the hot mill department. Powdered coal is used as fuel, the annealing temperature being controlled by recording pyrometers which are mounted in a separate building near the furnaces.

Hot rolled material intended for additional working is delivered to the cold rolled department by trucks drawn by electric industrial tractors. Cold finishing facilities include four stands each of 20-inch, 16-inch, 12-inch and 10-inch rolls together with two slitting machines, a scrap baler, two straight and cut machines, etc. Approximately 5000 tons of steel can be handled by the cold rolled department per month. Ample space is provided to permit storing the finished product and for preparing it for shipment. A spur track enters the building at the south end for convenience in loading the product.

Power plant and electric generating facilities were extended to handle the requirements of the open-hearth,blooming, bar and strip departments. A new boiler house was built at the company's blast furnaces property and three 836-horsepower Sterling type boilers and a 10,000-kilowatt generator installed. Blast furnace gas is being used under the boilers at present although powdered coal can be employed instead. All main power lines on the company's property are interconnected so that in case of failure at one particular power generating unit, power may be diverted from any station desired.

Institute Organized To Encourage Research

"To encourage and promote scientific research and scholarly achievement in every division of learning represented in the organization of the university; and in recognition of the need for further and more exact knowledge in science and in the applications of science to the affairs of modern life," Lehigh university, Bethlehem, Pa., has announced the organization of the Lehigh Institute of Research. Management of the new organization is vested in a board of didirectors composed of 13 members of the university staff and includes President C. R. Richards.

The institute will afford training in research methods to the following: Members of the teaching staff of the university; members of the scientific staff of the institute, including research fellows, research assistants and research professors appointed by the university and paid by it from its own funds or from funds for the purpose supplied by an individual, company or corporation; graduate students in the university; and special investigators temporarily employed for work on a particular investigation. The first fellowship has been founded by the New Jersey Zinc Co. and will be known as the "New Jersey Zinc Co.'s Research Fellowship in Science in Technology."

To preserve the records of its investigations and to render them available to every one interested, the institute proposes to publish and distribute from time to time bulletins presenting the results of investigations conducted by or under the direction of the institute, and to issue other material which may be helpful to the various interests which the institute seeks to serve. Under certain conditions and with the approval of the executive board, reports of such investigations may be presented before professional or technical societies and published by them.

Reports on T-Slots

A preliminary report on the standardization of T-slots has been issued by the committee caring out the standardization work under the procedure of the American Engineering Standards committee and under the joint sponsorship of the American Society of Mechanical Engineers and the National Machine Tool Builders' association. Drafts of the report may be obtained from the chairman of the committee, Erik Oberg, editor of *Machinery*, 140 Lafayette street, New York. Accompanying the report is a questionnaire inviting criticism and comment. The committee hopes to receive a critical review from users and manufacturers of machine tools.

Outlines Blast Furnace Practice in South

(*Concluded from Page* 1164)

grade bessemer iron is produced, which cannot be distinguished from that produced from iron ore.

On a recent campaign of No. 2 Bessemer furnace of the Tennessee company, 12,000 tons were produced, which showed an average analysis of: Silicon 1.95, sulphur 0.028, phosphorus 0.076, manganese 0.82 per cent. Total carbon content will average about 4.25 per cent. The quantity of slag produced per ton of iron, of course, can be governed. After experimenting, it has been found that with ordinary steel scrap of about 0.04 sulphur and coke 1.10 sulphur, 800 pounds of slag per ton should be made. This keeps the sulphur well below the saturation point of the slags and permits the control of the sulphur in the iron. As average slag analysis for this campaign shows: Iron oxide 0.71, silica 37.07, alumina 7.07, lime 35.47, magnesia 17.82, sulphur 1.39 per cent. The gas from the furnace when operating on this product shows about 10 B.t.u. higher than ordinary blast furnace gas, but considerably lower in sensible heat, averaging 4 per cent. The iron is cast in ordinary sand beds, from which it is removed and broken in the usual way. No trouble is experienced in breaking so long as sulphur is maintained under 0.05 and silicon above 1.50 per cent, since this retains most of the carbon in the graphitic state. High sulphur and low silicon produce an iron high in combined carbon, which is malleable and, of course, difficult to break. From 900 to 1200 pounds of coke are required to produce a ton of this iron. This operation should not be confused with that of the cupola. Besides melting the scrap and slag forming constituents, it returns to the metal all that was removed in the converter and the open-hearth except the phosphorus.

No. 1 furnace at Ensley, the largest in the south, with a cubical capacity of 31,235 cubic feet, consumed in August, 71,712 gross tons of raw material, yielding 17,602 tons of iron, with a coke consumption of 2515 pounds per ton of product. During this month the furnace was blown by turbo blower, delivering an average of 60,830 cubic feet of air per minute, with an average blast pressure of 19 pounds.

No. 3 furnace of the same group, typical of the larger furnaces in the district, is of the following dimensions: hearth 18 feet 6 inches, bosh 23 feet, bosh height 12 feet 9 inches, bosh angle 80 degrees, stock line 16 feet, total cubical contents 25,435 cubic feet. This stack is equipped with five 3-pass central combustion chamber stoves of 51,000 square feet heating surface each, or a total heating surface of 255,000 square feet. It is being supplied with air by five vertical reciprocating blowing engines. For August, the average daily blast requirement for this furnace was 55,180 cubic feet per minute, with average blast pressure of 16 pounds. The average blast temperature maintained was 1144 degrees Fahr., with an average top gas temperature of 485 degrees Fahr. A total of 62,594 gross tons of coke, ore, stone, cinder, scale and scrap was consumed in this furnace during the month. The gross metallic yield of mixture was 37.92 per cent. On account of this low yield, 9227 pounds of coke, ore, stone, cinder, scale and scrap were required to produce 1 ton of iron. Coke consumed per ton of product for the month was 2581 pounds. Of the total ore consumed, 94 per cent was hard red hematite, the remaining 6 per cent being converter slag, which was added to maintain the percentage of manganese desired in the iron.

Large Uses of Steel In Small Ways

WOODEN lead pencils appear to be joining hansoms, whiskers, brown derbies and free lunch in the limbo of things past, and in their stead women's bags and men's vest pockets have become weighted down with millions of mechanical pencils, usually called silver pencils. Lightness is a necessity and hence steel is at a disadvantage but for certain parts it is essential. In this way probably 60 tons of steel accompany American business men and women in the course of their day's work.

The experience of probably the largest maker of these pencils is that the tip where the lead emerges calls for the greatest strength. In this particular type of pencil the lead is gripped in a sort of rifled barrel and here the strength and ruggedness of steel is essential. All other parts are of brass or a nonferrous metal composition, for lightness. In the common size of pencil these steel tips weigh only 4.45 pounds per 1000 but this one manufacturer now has a production of 7,000,000 pencils annually, which consume 135,000 steel tips weekly. Three-sixteenths screw stock is the basis for these tips, which have a maximum diameter just under 3/16-inch and an overall length of 0.557-inch, including the stock which screws into the barrel. For the few large pencils which are made to use colored leads, ¼-inch screw stock is used. This screw stock is fed into automatic machines where seven operations are necessary for tapering, threading, drilling and counterboring. From the screw machines the tips go to swedging machines, where the steel at the small end is pressed down upon an arbor to give the interior grooves or rifling and to complete the tapering. Case hardening, polishing with India oil stones and nickel plating, in which orthodox practice is adhered to, follow in order. The final operation is buffing the entire pencil after assembly. Some of the mechanical pencils now on the market have no steel content while others use steel only in an interior spring arrangement for propelling the lead. This particular maker with an annual output of 7,000,000 pencils consumes about 15 tons of steel annually in its tips. Except for variation in size, the steel tips at the business end of 50 cent pencils are identical with those in the most expensive solid gold ones made. It is estimated that this and other makers of the metal pencils have fully 25,000,000 in service.

The maker of steel-tipped pencils also has a large business in the retailing of lead in small steel containers. These, with their caps, weigh 11 pounds per 1000. The raw material is cold-rolled strip, 0.013 x ¾ inches. The stock is fed into a punch press with multiple dies, and four operations are performed at once. As the stock emerges the box has been shaped and the name of the maker and the grade of lead stamped on it. A final operation closes the bottom. Only one operation is necessary for the cap. This interest markets about 5,000,000 small containers of pencil leads in the course of a year and this calls for nearly 30 tons of steel. Ready for business, the average mechanical pencil weighs little more than an ounce but its manufacture has set up no small industry. The largest maker has a battery of 72 automatic screw machines and 68 swedging machines, of which 15 of the former and 4 of the latter are devoted to the manufacture of steel tips. Demand for these pencils is largest in the last quarter of the year, just before Christmas, with a secondary peak at the beginning of school in the fall. For some unaccountable reason, possibly the figuring of income tax reports, the demand for lead is greatest in the first quarter. Constant demand for this form of writing utensil brings steady consumption of steel for its construction and indications are for its continuance, contributing its mite to the demand for steel.

Mechanical Pencils

THIS is the twenty-second of a series of articles dealing with some of the thousands of obscure uses of steel which in the aggregate go a long way toward absorbing the great American tonnage, and in proclaiming steel the universal metal. The first article on "Corsets" appeared Nov. 22. Other articles were "Pins," Dec. 6; "Pens," Dec. 20; "Cotton Ties," Jan. 17; "Steel Wool," Jan. 31; "Toys," Feb. 14; "License Plates," Feb. 28; "Spinning Rings and Travelers," March 13; "Hypodermic Needles," March 27; "Card Clothing," April 10; "Shoe Steel," April 24; "Tie Plates," May 8; "Crushed Steel," May 22; "Tacks," June 5; "Skates," June 19; "Knives and Forks," July 3; "Phonograph Needles," July 17; "Surgical Instruments," July 31; "Fence Posts," Aug. 14; "Needles," Aug. 28; "Eyeglass Cases," Sept. 18; "Golf Clubs," Oct. 2; "Fishing Tackle," Oct. 16.

AUTOMATIC SCREW MACHINES PRODUCING STEEL PENCIL TIPS

Fig. 1—View of buildings of tin plate plant looking toward the east

Making Tin Plate in Jungle Land

American Engineers Establish Plant in India, Operated Successfully in Defiance of Climatic Heat—Large Buildings, Washed Air, Cooled Floors—Much of the Equipment from United States

BY FRANK L. ESTEP

BUILDING a plant for making tin plate in India was the final result of consideration given in 1916 to a market for new and additional products of the Tata Iron & Steel Co. Investigation showed that tin plate was being imported into India, previous to the World war, at the rate of about 50,000 tons per year. A large percentage of this importation was used by the Burma Oil Co., for containers for petrol and kerosene.

The largest can manufacturing plant and filling station of this company was located at Budge-Budge, on the Hoogly river, just south of Calcutta, where tin plate, imported principally from Wales, was made into cans. Refined oil was brought in tankers from Burma to Budge-Budge, and the cans were then filled and distributed to various parts of India for consumption. During the war, tin plate was extremely difficult to secure and very high in price; deliveries were irregular and uncertain, and the operations of the oil company suffered.

Abstract of paper read at the fall meeting of the American Iron and Steel institute, New York, Oct. 24. The author is associated with Perin & Marshall, New York.

In view of this, serious consideration was given by Shaw, Wallace & Co., managing agents of the oil company in Calcutta, and later by the oil company officials in London, to the building of a plant for manufacturing tin plate in India.

A test sample of the Tata company's steel was poured and rolled into blooms in India, the blooms shipped to South Wales and there rolled into tin plate. The analysis proved satisfactory, and the resulting tin plates were of good quality. An agreement was entered into between the Tata company and the Burma Oil Co. for the financing of the enterprise; the Tin Plate Co. of India, Ltd., was formed, and a decision reached early in 1920 to proceed with the building of a plant within a convenient distance of the existing steel works.

A further understanding was had between the two companies regarding the supply of bars, electricity, water, etc., and a site decided upon for the plant, about three miles east of the steel company's new additions. The Tata plant is located at Jamshedpur on the main line of the Bengal-Nagpur railroad, between Calcutta and Bombay, about 150 miles west of Calcutta, where the elevation is about 530 feet, and the latitude 22 degrees North. The tin plate plant is called Golmuri Works, after an Indian village which occupied part of the plant site.

It was foreseen that to operate successfully under the climatic conditions in India, the contemplated plant would have to be of special design and original in many respects. Perin & Marshall, New York, were entrusted with the design and construction of the plant as consulting engineers. They had the benefit of the knowledge of temperatures and humidity and also the experience gained from the design of the greater extensions of the Tata company's plant.

At present, with the exception of one counter movement, resulting from the utilization of one continuous annealing furnace for both black and white annealing, there is no interference in the movements of materials, and this single case of interference will be eliminated when the second, or white continuous annealing furnace may be built. All materials for operation, incoming and

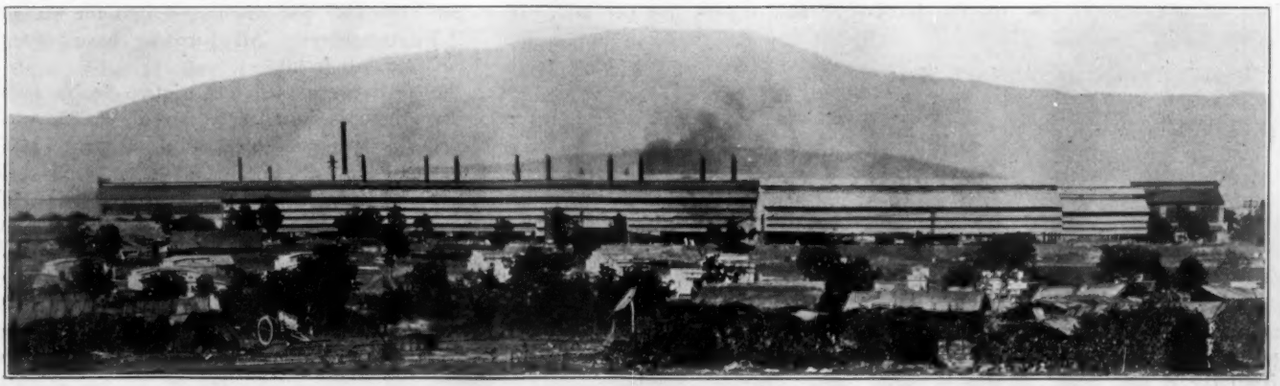


FIG. 2—VIEW OF PLANT LOOKING NORTH, SHOWING BUILDINGS ALMOST COMPLETED. NOTE THE CONSTRUCTION OF WALLS TO AFFORD MAXIMUM CIRCULATION OF AIR

outgoing, affect only the west, or left end of the plant, and all additional materials for extensions can by-pass the present plant on the north side, and the construction will not affect or interrupt operations. Water supply lines, transmission poles, all main sewers, recirculating water pond and pumps, 95 per cent of the tracks, foundations and motor capacity for cold rolls, foundations and underground cables for an additional motor generator set, and practically all main switchboards are installed for twice the present capacity, or one-half the ultimate capacity. Figs. 1 and 2 are external views of the present plant when practically completed and will give some idea of the construction of the buildings.

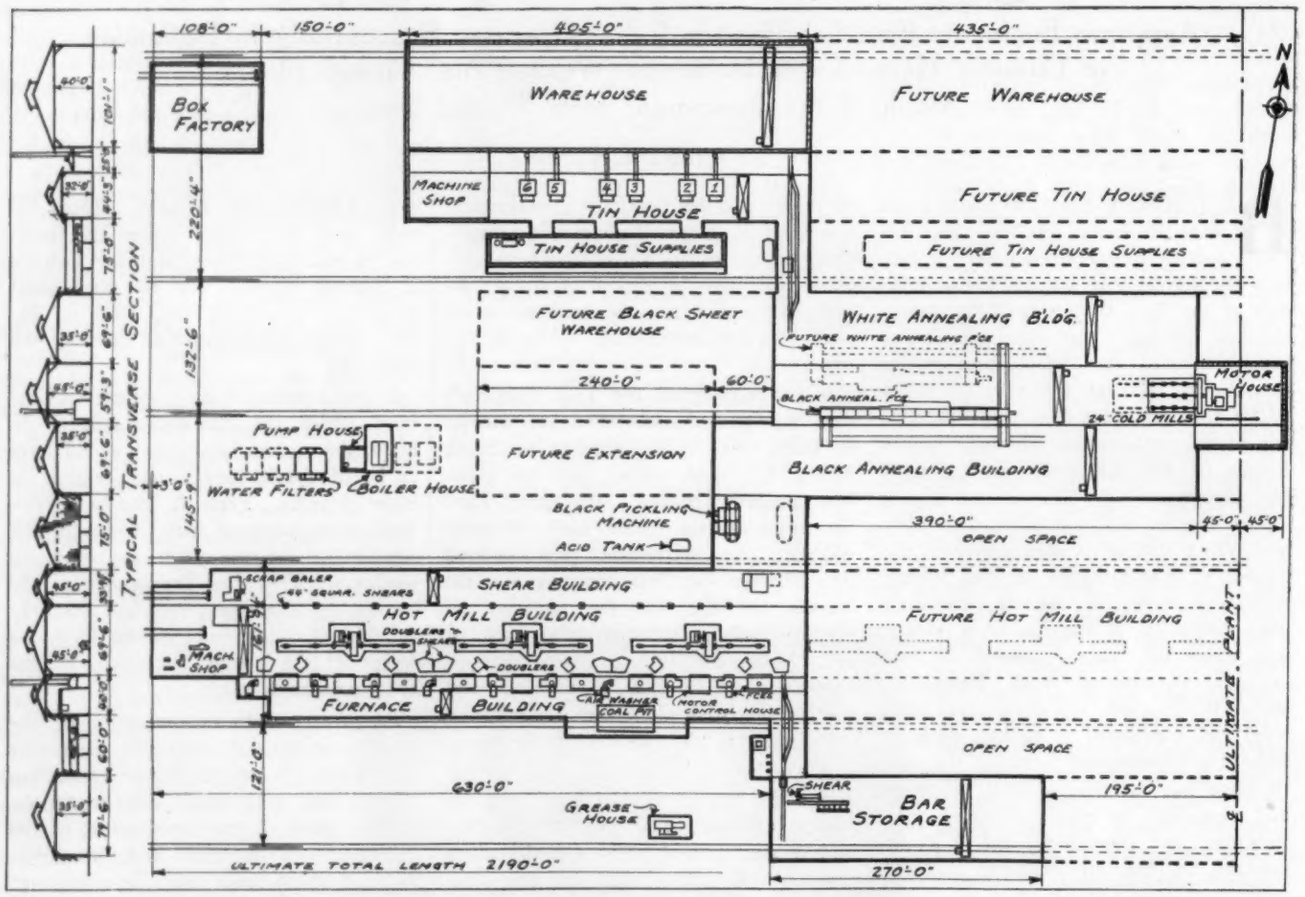


FIG. 3—GENERAL ARRANGEMENT OF THE TIN PLATE MILL OF THE TIN PLATE CO. OF INDIA

Special Provisions Against Heat

It was already known by the engineers from experience with the Tata plant, that to keep the inside of the buildings as cool as possible in the hot months, they must first of all be extremely high and of large volume, with huge monitors, roofs with wide overhanging eaves, and the sides made with long louvre construction and left wide open wherever possible for a distance of 10 to 12 feet from the ground level.

It also was necessary that the buildings be spread apart so that wherever possible they could be exposed on four sides for air. All main buildings are 35 feet to the roof truss; except the furnace building, hot mill building proper, shear building, and annealing furnace building, all of which are 45 feet to the roof.

These buildings are larger in volume than buildings in tin plate plants in the United States, and the furnace, hot mill and shear buildings, in addition to their extreme height, were stretched in length to give a wide spacing of mills. The hot mill building proper, covering two double mills per drive and six mills total, gives an average floor area per double mill of 69 feet 6 inches x 90 feet, or 6255 square feet per mill. In section the hot mill building proper has 3127.5 square feet to the bottom chord of roof truss, 505.5 square feet under the main roof, and 117.2 square feet under the monitor, a total cross sectional area of 3750 square feet. This is, therefore, a total volume of 337,500 cubic feet per double mill.

These floor areas, and volumes per double mill of the hot mill building, 6255 square feet and 337,500 cubic feet, respectively, are to be compared with approximately 4400 square feet and 150,000 cubic feet per double mill in the United States. In other words, the floor area of the Indian hot mill is 42 per cent, and the volume is 125 per cent in excess of the American.

Furnaces Completely Hooded

Each pair and each double sheet furnace is completely hooded over, and each hood attached to a separate stack, larger in diameter and surrounding the draft stack, and extended several feet through the roof. Practically all the radiated heat from the furnaces, and smoke, flame and heat coming out from the doors when open, and much of the smoke and heat that arises from the stokers at the back of the furnaces, are immediately carried by these hoods and stacks out of the building through the roof and discharged into the outside atmosphere. All furnaces have water-cooled fronts.

Between each unit of two double mills there is installed a fan of 36,000 cubic feet per minute capacity delivering 18,000 cubic feet to the men on each mill through underground ducts and 11 elbows. In terms of square feet of floor area, there is delivered approximately 3 cubic feet of air per minute per square foot of total floor area, or over 9 cubic feet of air per minute per square foot of operating area. This means over 400 cubic feet of air per minute per man.

Not being sure whether or not the

men in the hot mills could stand up to their work better with a given quantity of hot dry air, or with the same quantity of air at a lower temperature and higher humidity, each of the fans was installed with an air washer on its suction. By this means any proportion of the total amount of air going to the men, from zero to 100 per cent can be put through a spray and its temperature reduced. This was a very wise provision, and it may be said positively that it was practically the salvation of the hot mill, so far as its continuous operation was concerned during the first summer period of 1923.

Special provision also was made by installing an exceptionally large area of water-cooled floor plates per mill. There are 1220 square feet per double mill, 270 on the back side, and 950 on the front side of each mill. These floor plates are cast iron, and although not as efficient in cooling as the welded water box plates, they have answered the purpose admirably. During the hottest periods in 1923, although the incoming water reached a temperature as high as 100 degrees the temperature of the water at the discharge weirs never exceeded 105 degrees.

Power Equipment Made in States

Electrical power, 3-phase, 50 cycles, is supplied from the Tata company's station, three and one-half miles away. The power house contains a 250-volt direct current motor generator and the motor driving the cold rolls, together with the gear reducing set and gear train. There is also a motor driven compressor and a direct connected oil engine driven generator unit for emergency use. All alternating current auxiliary power apparatus is 440 volt, all cranes are direct current and many of the individual machine tools, stoker drives, blowers and all tinning machines are driven with variable speed direct current motors. All electrical equipment, except some miscellaneous material and small motors was built by the General Electric Co., Schenectady, N. Y.

The hot mill department consists of three units of two double mills each, one double mill on either side of the motor. The mills were furnished by the Mackintosh-Hemphill Co., Pittsburgh and each unit is driven by 1000 horsepower motor through a reducing gear set with heavy flywheels, furnished by the Woodard Machine Co., Wooster, O. The rolls are 28 inches in diameter.

The cold roll department consists of four sets of rolls, three in tandem, also furnished by Mackintosh-Hemphill Co., the roughing intermediate and the finishing trains being driven by a 750-horsepower motor through a gear reducing set

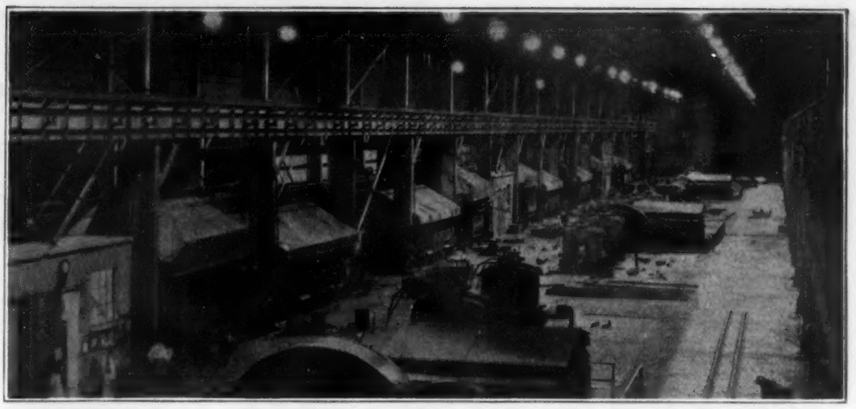


FIG. 4—HOT MILL BUILDING SHOWING THREE DOUBLE MILL UNITS, SHEET AND PAIR FURNACES AND MOTOR HOUSE. NOTE FURNACE HOODS

and a train of five cut gears manufactured by the Woodard company. All rolls, hot and cold, were furnished by the Pittsburgh Roll Corp., Pittsburgh. The shears and roll lathes were furnished by the United Engineering & Foundry Co., Pittsburgh, while the pair furnaces, sheet furnaces, continuous annealing furnace and furnace cars were furnished by the George J. Hagan Co., Pittsburgh. The pair furnace pushers are operated hydraulically, as is the scrap bundler, which was built by the Logemann Bros. Co., Milwaukee.

Nine cranes completely cover all operating departments, with the exception of the black pickling, and range in capacity from 5 to 15 tons. They were furnished by the Alliance Machine Co., Alliance, O. All ratings are in long tons.

The hot mills were equipped with six Steele-type mechanical doublers for the roughers, and also six with shears for the finishers. These were furnished by the American Sheet & Tin Plate Co., Pittsburgh. Experience has proved that without the mechanical means of doubling, it would have been impossible to successfully operate during the hot months on the two-roll, three-part system in India.

The black pickling machine is of the Grey type and was built by Taylor & Sons, Ltd., Briton Ferry, England, and is the latest design of this type machine.

Cast iron annealing bottoms and cast iron false bottoms were made locally in India to save freight, while the hammer-welded annealing box covers were manufactured by the Blaw-Knox Co., Pittsburgh.

The white pickling and tinning is done on six Thomas-Davies-type combination white pickling, tinning and cleaning machines, manufactured in South Wales. These are installed in a building designed especially for them and erected rights and lefts with coal firing pits common to two machines, and so arranged that each machine discharges its tinned product directly into the warehouse for inspection. Each machine is completely hooded and connected to a separate stack which surrounds the tin pot stack. The draft was insufficient to pull out the heavy fumes and vapors, and suction fans were later installed with each hood. The hoods can be quickly removed by crane, to permit stripping the pots during repairs.

A miscellaneous lot of tools were furnished mostly from the United States for two machine shops and an electrical shop.

Since the entire section of the territory where the plant was built was originally nothing but a jungle, and since it was known that about 100 Europeans

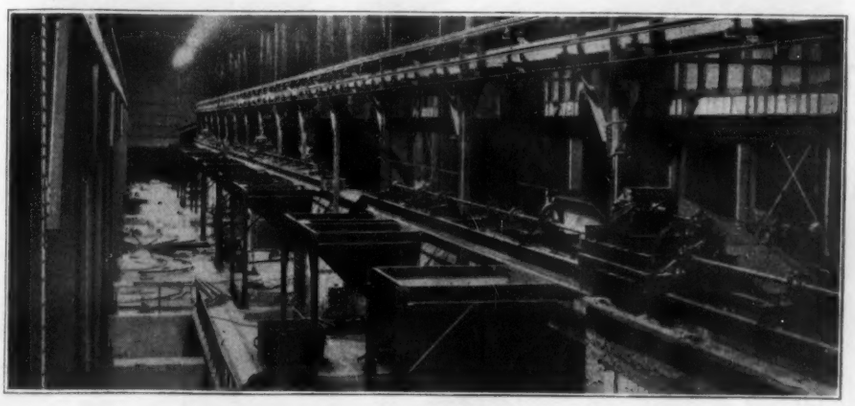


FIG. 5—ANOTHER VIEW OF THE HOT MILL BUILDING

FIG. 6—HOT WEATHER ATTIRE DURING THE CONSTRUCTION PERIOD
Left to right, Messrs. Sampson, Leyshon, Estep and Bell

would have to be imported into India for the operation of this plant, it was found necessary to put up a complete European industrial city, and three or four new and modern Indian villages, for the housing of the higher class and better paid Indian and Eurasian labor.

The method of handling and the movement of materials through the plant during the process of manufacture, from bars to finished tinplate, is as follows: Bars, brought in from the Tata company's plant are unloaded by a spreader beam crane in the bar storage building placed when wanted at the bar shear, where they are cut to the desired length. Cut bars are loaded on bar carriers, picked up with the crane, stacked on a truck and weighed as they pass into the furnace building. Here the bar carriers are placed by a 5-ton crane back of the six continuous pair furnaces.

Scrap from the mechanical doubler shears, as well as all of the scrap from the squaring shears, is collected in large steel buckets, carried with the mill crane or the shear building crane to a point opposite the scrap baling press, which is located in an extension to the shear building. A 3-ton monorail hoist made by Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., covers the baling press pocket, and extends out of the building far enough to cover three railroad cars.

Black plate is opened adjacent to the shears, placed on special carriers and conveyed by overhead crane to a point opposite the black pickling building, and here placed upon small hand trucks. These trucks pass over a scale and all plate leaving the opening floor is weighed as it enters the department.

In operation of the black pickling machine the crates make an elliptical movement into one acid and two water tubs, and at the discharge end of the circuit the crates are unloaded and the plates passed over the inspection benches, which are located directly underneath the crane runway, and then stacked without further handling onto the annealing bottoms in the black annealing building. The plates are placed on false bottoms which rest on the annealing bottom proper.

After the plates are flushed with a hose and the bottoms covered and sealed, they are picked up with a 15-ton crane and placed on a furnace car, which in turn rests on a transfer car, at the entering end of the black annealing furnace. After passing through the furnace for black annealing, the furnace cars are discharged onto another transfer car at the other end of the furnace, which brings them back into the black annealing building.

When properly cooled the white annealed bottoms are picked up with a 15-ton crane, put on a car, and after passing over a scale and being weighed are delivered underneath a 10-ton crane in the tin house. This crane picks up each false bottom with its load of white plate, or the bottom with the entire load, and sets it down in front of either of the tinning machines. Here the plates are removed from the piles, are sanded and placed in the feeding pickets of the tinning machines.

Clearing of the site for the building of the plant proper was begun in January, 1921, but not much work had been completed before June 15, 1921, when J. W. Bell was appointed superintendent of construction. About 35 per cent of the total volume of heavy concrete had been put in, which represented only 15 to 20 per cent of the actual concreting work, and only one railroad track was in position and sufficient space had not been provided by June for the unloading and storing of imported materials which would soon begin to arrive. There were received and erected a total of about 4200 tons of structural work and about 4000 tons of machinery, over 90 per cent of which had been imported from the United States and England via Calcutta. This structural steel, together with the buildings for the Tata extensions, made a total of about 32,000 tons of fabricated steel, all of which was furnished and erected by the McClintic-Marshall Co., Pittsburg.

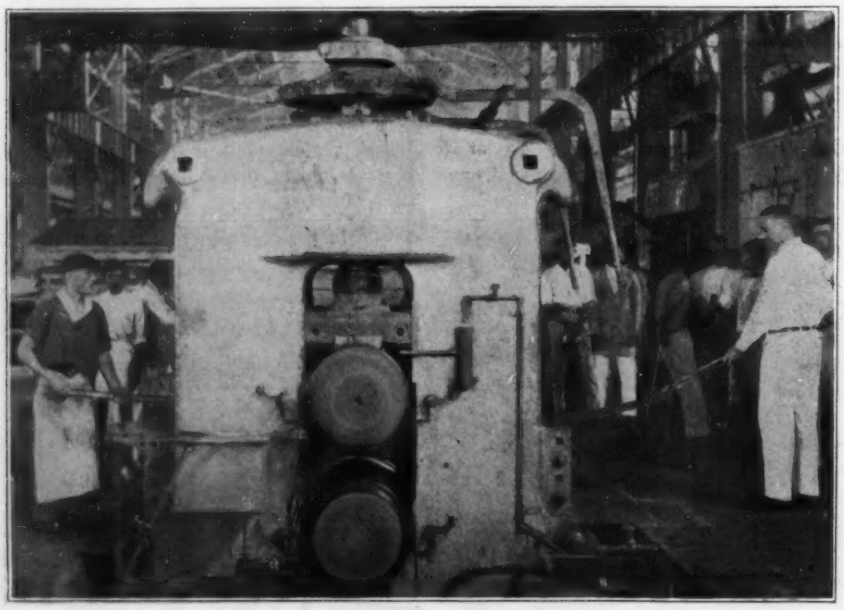


FIG. 7—STARTING THE SIXTH AND LAST HOT MILL DEC. 12, 1923

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

CHARLES M. KITTLE, senior vice president of the Illinois Central railroad, has been made president of Sears, Roebuck & Co., Chicago, succeeding Julius Rosenwald, who becomes chairman of the board. Gen. R. E. Wood, until recently with Montgomery, Ward & Co., becomes a vice president of Sears, Roebuck & Co. The company's foundry interest includes ownership of the David Bradley Mfg. Co., Bradley, Ill., and the King Sewing Machine Co., Buffalo, and partial control of the Rundle Mfg. Co., Milwaukee, Rock Island Mfg. Co., Rock Island, Ill., and the Hercules Corp., Evansville, Ind.

* * *

William P. Day, president of the International Steel Tie Co., Cleveland, has been elected a director of the Reliance Trust Co., that city.

* * *

A. T. Davis, formerly with the Detroit Stove Works, Detroit, now is connected with the Ferro Enamel Supply Co., Cleveland.

* * *

F. W. T. Amis has returned to his office at 2 Rector street, New York, from an extensive trip during which he visited all of the iron and steel centers of Europe.

* * *

Russell C. Ball has been elected president and treasurer of the Philadelphia Gear Works, Philadelphia, and R. J. Coulter has been chosen vice president and secretary.

George L. Markland Jr., formerly president, now is chairman of the board. Mr. Markland is president of the American Gear Manufacturers association.

* * *

Evan F. Jones, recently made general manager of the Atlas Die Casting Co., Worcester, Mass., formerly was connected with Wickwire-Spencer Steel Co. that city.

* * *

C. I. Ochs, recently appointed general manager of the Eaton Axle & Spring Co., Cleveland, formerly was general manager and vice president of the axle division of that company.

* * *

George Batten, for 16 years associated with the Schwabacher Hardware Co. of Seattle and in charge of sales of steel tool, has resigned to accept the position of sales manager for the Ludlum Steel Co., in San Francisco, and will make his headquarters in that city at 80 Tehama street.

* * *

W. L. Parker, purchasing agent of the Edison Lamp Works, Harrison, N. J., is recovering at his home in Glendale, N. J., from the effects of an operation for appendicitis.

* * *

John E. Hunt has left the General Petroleum Corp. to assume new duties as mechanical engineer in the technical department of the Crosby Steam Gage & Valve Co., New York.

* * *

J. W. Gaskill, purchasing agent of the John A. Roeblings' Sons Co., Trenton, N. J., has been appointed chairman of the iron and steel committee of the Purchasing Agents association of New York.

* * *

Justin Griess has been elected a director of the Empire Rolling Mill Co. Cleveland, to fill the vacancy caused by the death of A. W. Ellenberger. Mr. Griess is vice president of the McMyler-Interstate Co., Cleveland.

* * *

Wilson P. Hunt, recently elected a director of the National Machine Tool Builders' association, for a term of three years, at the recent annual meeting at Lenox, Mass., is president of the Moline Tool Co., Moline, Ill.

* * *

C. C. Wheaton, now handling sales promotion work for the Central Steel & Wire Co., Chicago, large cold-drawn steel warehouse interest, formerly was advertising manager of the Lancaster Steel Products Corp., Lancaster, Pa.

* * *

A. R. Glancy, recently made general manager and vice president of the Oakland Motor Car Co. in charge of production, is president and general manager of the Waukesha Malleable Iron Co., Zanesville, Wis.

* * *

Walter M. Petty, chief engineer of the Service Motors, Wabash, Ind., will join the International Motors Co., maker of Mack trucks and busses, as engineer in charge of its railway motor coach division. Mr. Petty has been with the Service company for 10 years.

* * *

Harry Miner, European representative for Kearney & Trecker Corp., Milwaukee, manufacturer of milling machines; Landis Tool Co., Waynesboro, Pa., builder of machine tools, and Warner & Swasey Co., Cleveland, manufacturer of turret lathes, has returned to the United States.

* * *

Perry L. Francis, who recently joined the sales organization of the Alan Wood Iron & Steel Co., Philadelphia, and who will work under A. B. Ambler, agent for the company on the Pacific Coast, has returned from a visit to the plant and has opened offices at 909 Dexter Horton building, Seattle.

* * *

John C. Brill Co., 610 United Fruit Co. building, New Orleans, has been appointed by Bliss & Laughlin, Inc., Harvey, Ill., manufacturer of turned shafting, cold drawn and cold-rolled steel, etc., as its representative in the South. The Brill company will represent Bliss & Laughlin, Inc., in Western Tennessee, Alabama, Mississippi, Louisiana, Texas and Arkansas.

* * *

Judge Moses H. Grossman, executive head of the Arbitration Society of America, has left New York for a series of visits to Cleveland, St. Louis, Indianapolis and Milwaukee.

* * *

Mrs. Susan Young Eagan, Atlanta, widow of the late John J. Eagan,one of the founders and for many years president of the American Cast Iron Pipe Co., Birmingham, Ala., has been added to the board of directors of that company.

C. O. Hodges, assistant treasurer of the American company and Dr. C. B. Bray, also have been added to the board. The board now numbers 10 members.

* * *

Dr. Douglas W. Johnson, professor of physiography in Columbia university, New York, has just been made a Chevalier de la Legion d'Honneur by the French government, the decoration being in recognition of the "valuable services rendered by Prof. Johnson to the French cause." Dr. Johnson represented last year, Cornell, Harvard, John Hopkins, Massachusetts Institute of Technology, University of Pennsylvania, Yale and Columbia as exchange professor, with which the national department of public instruction in France maintains exchange relations in engineering and applied science.

Sums Up Industry

Commerce Yearbook Replete With Authoritative Data on Business

Washington, Oct. 28.—Comprising an elaborate and authoritative review of the economic year throughout the world, prepared from the point of view of American industry and commerce, the second issue of the *Commerce Yearbook*, a new publication by the department of commerce, is just off the press. The first edition was presented last year and contained only a partial review of business and industrial activity and development for 1923, but the edition just out gives a comprehensive review of that year.

Of the more than 700 pages in the book, about 20 pages are devoted to the iron and steel industry, with additional sections reviewing activities in the copper, lead, zinc, aluminum and tin industries. In a general summary on the iron and steel industry for 1923, the *Yearbook* says:

"The year 1923 was phenomenal for iron and steel, the spring months, particularly May, witnessing an activity previously unsurpassed in several branches of the industry. Pig iron production established a new record, 40,361,000 long tons for the year. Steel ingot production, which was second to the record year of 1917, amounted to 43,227,000 tons. Shipments of iron ore increased 39 per cent over those for 1922, and 48 per cent more iron ore was mined, bringing the amount for 1923 to 70,018,000 tons.

The iron and steel section contains a chart of the monthly average production of pig iron and steel ingots and exports and imports of pig iron and rolled products by quarters, as well as charts of the output of pig iron by principal producing countries and of the production of pig iron, steel ingots and castings and finished rolled products, and exports of pig iron and rolled products.

It also contains tables of production, stocks, unfilled orders and exports and imports from 1913 to 1923, inclusive; a combined summary for blast furnaces and steelworks and rolling mills from 1899 to 1921, inclusive; a table of world production of iron and steel before and since the war, based on figures from IRON TRADE REVIEW; production of iron ore by countries; iron ore production shipments, exports and imports; annual averages of production, exports and imports of pig iron, production of steel ingots and castings and production of finished rolled products; production of pig iron by processes; number of furnaces in blast, based on IRON TRADE REVIEW figures; production of steel ingots and castings by processes; production of rolled and miscellaneous steel products; average prices of pig iron per ton at Pittsburgh, from 1913 to 1923, inclusive, based on IRON TRADE REVIEW market reports; average prices of iron and steel products; prices of selected iron and steel products; and distribution of output of finished steel in 1923 by consuming groups and by individual products, as obtained from IRON TRADE REVIEW:

Other sections in the *Yearbook* are devoted to general production and employment statistics and summaries; wholesale and retail prices; agricultural products in general; fuel and power; construction materials; construction; machinery, railway equipment and electrical apparatus; textiles and clothing; leather and leather products; paper and printing; automotive products; rubber and rubber products; chemicals; transportation and communication; finance and banking; foreign trade; international trade, and many other subjects.

In his letter of submittal to Secretary of Commerce Herbert Hoover, Dr. Julius Klein, director of the bureau of foreign and domestic commerce, in presending the *Yearbook* states that the facts contained in this issue and its successors should be of assistance in laying out long-range programs for the stabilization of business and industry so as to minimize the economic losses resulting from the receurrent extremes of the business cycle.

Farm Tool Outlook

Improves, According to Makers in Session at Chicago

Chicago, Oct. 28.—Greatly improved collections and a fair increase in demand for the fall lines seem to sum up the benefits thus far to the implement trade from enhanced grain and livestock prices, but representative manufacturers attending the annual convention of the National Association of Farm Equipment Manufacturers last week were unanimous in their hopeful outlook for the spring lines.

Finley P. Mount, president of the Advance-Rumely Co., LaPorte, Ind., and executive chairman of the association, was advanced to the post of president, succeeding H. J. Hirshheimer, of the La Crosse Plow Co., La Crosse, Wis. E. J. Gittsin, vice president of the J. I. Case Threshing Machine Co., Racine, Wis., was made executive chairman. Resolutions were adopted opposing adoption of the metric system, calling prison manufacture of implements a mence to the industry, favoring the Lakes-to-Gulf waterway, and opposing the child-labor amendment to the constitution. Pittsburgh plus was not mentioned.

That labor is the "one great cost element which has not been deflated" was pointed out by William Black, president of B. F. Avery & Sons, Louisville, Ky. Since 1913 commodities have advanced 44 per cent and labor 111 per cent. He declared "there must come a readjustment of this condition and labor must accept its deflation losses as industry has done, but it is difficult to say when and how this revision will be effected." Mr. Black, in warning that the labor supply shut out by the immigration act would be recruited from the farms, said:

"The question we have to answer is from what source will we draw our labor when we arrive at the next period of general industrial activities. Does it not seem reasonable that it will be drawn from the farms? The farmers are unable to hold their men against the lure of high wages and white lights. The colored population will become more evenly distributed between the North and the South because the negroes will be attracted to the industrial centers of the North.

"This shifting of labor will mean a new responsibility for the implement manufacturer; that of supplying farm machinery which will enable a smaller portion of our population to remain on the farms and feed an ever increasing number of non-producers of food in the towns and cities.

In forecasting the broad field before implement makers G. A. Ranney, vice president of the International Harvester Co. said:

"I predict, in defiance of anything you may hear from Detroit, that cows will still be giving milk 30 years from now, but that comparatively few of them will be milked by hand.

"I predict that wheat will still be grown, but it will be harvested by simplified power-propelled machines and hauled by some form of automotive vehicle—that the farm wagon will have disappeared from the rural roads just as the horse and buggy have already vanished.

"I predict that corn will still be raised, and perhaps in much greater relative quantities than now, but that power drawn cultivators and harvesters will very largely supplant the present horse drawn corn tools.

"I predict that cotton, freed from the boll weevil, will still pour a stream of wealth into the South, but that the human cotton picker will be supplanted by power-driven machines.

"I predict that farmers will still live on their land and that their homes will contain every modern convenience available at the time to the dwellers in cities.

"I accept the forecast of 150 million population by 1954 and I predict that the food demands of that larger population will have brought a largely increased acreage in farm lands and a largely increased demand for well designed farm implements.

"I predict that within the generation to come the farmer will have been put on a permanent basis of equality as to his compensation with all other industry and labor.

"I predict that the farm implement manufacturer who does not keep pace with the development of power on the farm will drop by the wayside.

Delivered Price System in Doubt

Uncertainties Felt in Other Industries Since the Abolishment of Pittsburgh Plus—Trade Commission Believes Steel Markets Soon Will Be Adjusted to New Conditions

WASHINGTON, Oct. 28.—Inasmuch as the cease-and-desist order of the federal trade commission, abolishing Pittsburgh plus in the steel industry, would set up virtually as many basing points for steel prices as there are steel plants in the country, representatives of other industries, which have been quoting uniform delivered prices and thus absorbing the cost of transportation from points of production or shipment, have been expressing no little concern as to whether the trade commission will seek to interfere in their methods of quoting prices. A number of inquirers have sought information in the last few weeks as to whether uniform delivered prices in various industries and lines of merchandising are sound, legitimate and in accordance with law, since the trade commission has declared the Pittsburgh plus price method economically unsound and discriminatory.

Questions have been asked the trade commission as to whether its cease-and-desist order is not inconsistent in view of the fact that no formal attack has been made against the delivered price system generally under which the large majority of the commodities of the country are marketed.

The trade commission's majority view of this situation, however, is that in the case of most other commodities sold on delivered prices, the cost of transportation, as applied to the individual article, is not so great a factor in the cost of the given article, and that freight rates are a less important factor in most of the markets than is the case in the steel markets. During the arguments in the Pittsburgh plus case before the trade commission, Commissioner Nelson B. Gaskill, who dissented from the majority opinion, raised this question in regard to uniform delivered prices in the case of many commodities sold. He asked, for instance, why discrimination does not exist in the marketing of such a commodity as a can of soup, for which a uniform delivered price is asked whether the user lives near the plant where it is prepared for shipment or whether located at another part of the Continent.

Attorney K. E. Steinhauer of the trade commission counsel stated that freight rates play an important part in the steel markets, and that a uniform delivered price developing from a system, such as the Pittsburgh basing point method, would bring about discrimination to an extent where it would be injurious, while in the case of many other commodities sold the cost of transportation on an individual article is so small relatively that the delivered price shows little discrimination against the user located near the point of production. Attorney Steinhauer argued that the price of steel under the Pittsburgh plus method usually was made contingent upon the location of the buyer. In the case of prices of articles in which freight rates are less of a factor, relatively, than is the case in steel, no complaints are made as to the price level, even though this level is a uniform delivered price.

Others Seek Commission's Views

Many representatives of a number of markets feel that an attempt to outlaw the delivered price would be an attack upon the marketing methods in every industry where goods and raw materials are bought and sold. Many in the steel industry feel that the ban against the Pittsburgh plus does not sufficiently take into consideration the problem of obtaining raw materials, the freight cost of which also helps to determine the ultimate market costs.

Representatives of the cement industry have sought information as to the price situation as viewed by the trade commission. In this industry the products are sold on delivered prices to a large extent, although f.o.b. mill prices and basing points also exist. The Pittsburgh plus decision has brought uncertainty to many lines of industry, it is pointed out.

The trade commission, on the other hand, is said to feel that the new market situation in the steel industry soon will be adjusted, and that the present groping for a basis for transactions will evolve satisfactory market conditions within a comparatively short time. Those close to the trade commission believe that a market situation may develop which would be similar in many respects to that upon which automobiles are sold. It is expected that a large number of f.o.b. mill prices will be established and that the freight will be paid by the buyer in some cases, in other cases by the seller and perhaps the rates will be split between producer and buyer, according to conditions. While this, naturally, may be expected to restrict markets of many mills, the commission's view is that permission has been granted in the cease-and-desist order for delivered prices to be used sufficiently to widen markets and to meet competition in good faith within the meaning of the Clayton law.

No rulings have been made by government departments against rebates of freight, if the freight rate is included in invoices discounted for cash payments of merchandise. The Elkins law, now a part of the interstate commerce act, provides strict penalties for rebates by railroads to shippers, or solicitations for rebates by shippers, but this applies only to relations between the carriers and shippers, and does not prohibit discounting of entire invoices, including the freight rates by sellers of merchandise. Some sellers and buyers of steel have been under the impression that discounting of freight invoices would not be allowed.

The trade commission's viewpoint is that the interstate commerce commission will find less difficulty in revising some of the short haul rates on steel products since Pittsburgh plus has been ordered abandoned. During the hearing of the Pittsburgh plus case, trade commission counsel sought to show that steel companies, quoting prices under the Pittsburgh basing point, were hindering the interstate commerce commission in its work of revising freight rates on steel.

The charge was made by trade commission counsel that whenever the interstate commerce commission raised rates, prices of steel on the Pittsburgh basis also advanced to absorb this extra freight charge, and that the revenues of the railroads were affected by Pittsburgh plus beyond the power of the interstate commerce commission to regulate.

Detroit Employment Up

Detroit, Oct. 28.—Industrial employment in this city increased 373 for the week ended Oct. 21, according to the Employers' association which reports a total of 195,960. In previous week there was a decrease of 599.

Steel Imports and Exports Steady

Little Change Is Shown In September Figures from Those of August, Imports Totaling 45,217 Tons and Exports 136,262 Tons for Month Just Ended—Ferromanganese Imports Increase Greatly and Semifinished Shipments Also Have Large Gain

FOREIGN trade of the United States in iron and steel products, showed little change in September from the levels of August. Imports for the month just ended, totaled 45,217 tons, as compared with 44,928 tons in August. Exports for September were 136,262 tons as compared with 136,025 tons in August.

For the nine months ended September, 1924, imports totaled 459,610 tons as compared with 734,734 tons for the entire year, 1923 and 690,894 tons for the first nine months of that year. Exports for the nine-month period of 1924 amounted to 1,409,514 tons compared with 2,009,141 tons for the entire year of 1923.

Imports of iron ore in September showed a large increase over those of August, being 181,220 tons in the former and 115,703 tons in the latter. Receipts of iron ore for the nine months of 1924 ended with September were 1,441,074 compared with 2,297,144 tons for the like period of 1923. Imports of ferromanganese increased from 801 tons in August to 3486 tons in September while ferrosilicon dropped from 319 tons to 92 tons in the same period. Manganese ore imports dropped 9891 tons from 16,160 tons in August to 6269 tons in the month of September.

Most of the classifications on the import list remained practically stationary,

IMPORTS AND EXPORTS
Gross Tons

	1924 Imports	1924 Exports	1923 Imports	1923 Exports
Jan.	26,677	251,284	120,080	124,444
Feb.	42,054	168,191	67,707	135,182
March	39,279	124,762	106,206	165,624
April	50,975	132,739	77,909	179,159
May	66,805	168,172	75,891	204,988
June	60,474	172,982	68,019	172,747
July	30,410	138,845	53,448	170,259
Aug.	44,928	136,025	45,432	163,010
Sept.	45,217	136,262	36,612	173,664
Oct.	.....	.....	29,884	154,079
Nov.	.....	.....	26,534	186,770
Dec.	.....	.....	27,012	179,215
Total	459,610	1,409,514	734,734	2,009,141

Year	Imports	Exports
1922	712,895	2,005,100
1921	135,829	2,150,276
1920	421,274	4,934,087
1919	322,264	4,397,295
1918	169,110	5,338,019
1917	330,201	6,465,053
1916	328,965	6,110,732
1915	282,398	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635

CASTINGS AND FORGING EXPORTS
Gross Tons

	September 1924	September 1923	Nine months ended September 1924	Nine months ended September 1923
Iron castings	827	853	6,295	7,654
Steel castings	355	576	4,679	3,870
Car wheels and axles	2,710	2,111	16,558	15,414
Iron and steel forgings	56	336	1,177	2,455
Total	3,948	3,876	28,709	29,393

FERROALLOY EXPORTS
Gross Tons

	September 1924	September 1923	Nine months ended September 1924	Nine months ended September 1923
Ferrosilicon	....	2	726	659
Ferromanganese and spiegeleisen	108	45	3,253	3,265
Tungsten, manganese and other ferroalloy ores	....	9	765	704
Ferrotungsten, tungsten metal and wire	....	....	2	1
Ferrovanadium	....	....	23	11
Other ferroalloys	27	6	271	98

IRON AND STEEL EXPORTS
Gross Tons

	September 1924	September 1923	Nine months ended September 1924	Nine months ended September 1923
Pig iron	4,799	2,148	34,083	23,076
Scrap	2,668	9,681	87,205	49,214
Semifinished	14,591	8,466	66,459	87,968
Steel bars	6,139	11,707	78,650	122,728
Alloy steel bars	100	276	1,947	1,942
Iron bars	259	630	4,243	11,313
Wire rods	881	4,245	14,426	23,919
Boiler plate	183	1,774	3,291	7,486
Other plates, fabricated	6,122	6,975	64,998	85,117
Galvanized sheets	8,142	7,660	75,072	91,553
Steel sheets, black	11,395	8,227	110,960	77,415
Iron sheets, black	681	1,136	7,972	11,353
Strip	894	751	7,938	9,526
Hoops, bands and scroll	1,053	2,598	18,724	20,333
Tin, terne plate	7,735	9,094	120,542	80,426
Structural shapes, plain	9,098	9,984	78,458	101,010
Structural shapes, fabricated	2,189	5,300	14,112	25,425
Ship and tank plates	410	188	6,303	2,377
Metal lath	99	102	1,491	900
Other structural forms	3,630	4,302	33,658	31,968
Rails over 50 pounds	17,447	31,072	142,837	178,475
Rails under 50 pounds	1,266	1,700	15,038	19,347
Rail joints, etc.	1,051	2,176	15,464	17,176
Switches, frogs, etc.	808	716	5,197	3,909
Railroad spikes	917	658	6,356	6,861
Railroad bolts, nuts, etc.	271	410	1,776	2,069
Boiler tubes	1,034	1,845	10,298	12,917
Casing and oil line pipe	5,786	4,244	73,691	43,010
Welded black pipe	4,130	6,482	50,192	59,298
Welded galvanized pipe	2,977	2,671	25,727	21,930
Malleable iron pipe fittings	....	946	....	6,133
Malleable iron screw pipe fittings	824	....	8,951	....
Cast iron pipe	....	1,648	....	11,427
Cast iron pipe fittings	....	1,336	....	9,455
Cast iron screw fittings	432	....	5,499	....
Cast iron pressure pipe fittings	907	....	10,332	....
Cast iron soil pipe fittings	740	....	4,906	....
Plain iron and steel wire	1,141	4,383	15,039	29,126
Galvanized wire	888	3,592	16,110	41,054
Barbed wire	6,297	2,903	64,204	54,856
Woven wire fencing	266	407	2,631	3,343
Wire cloth and screening	89	415	1,369	1,582
Wire rope	341	554	3,463	5,057
Insulated wire and cable	48	133	841	1,157
Other wire	652	922	8,521	11,066
Cut nails	111	118	1,520	1,888
Wire nails	527	3,064	19,021	29,179
Horseshoe nails	76	80	750	910
Other nails	290	435	3,179	3,952
Bolts, nuts, etc.	1,471	1,567	13,292	14,234
Horseshoes	89	106	760	702
Other iron and steel	4,210	5,640	48,039	51,782
Ferromanganese and spiegeleisen	108	45	3,253	3,265
Ferrosilicon	.....	2	726	659
Total	136,262	175,514	1,409,514	1,510,868

DESTINATION OF EXPORTS FOR SEPTEMBER, 1924
Gross Tons

Countries	Rails	Plates Galvanized	Plates not fabricated	Tin plate	Steel sheets, black	Barbed wire
Argentina	....	192	....	390	18	1238
Australia	....	491	....	....	....	445
Brazil	817	7	....	139	35	1478
British India	....	....	....	128	....	....
Brit. South Africa	....	83	....	....	....	231
Canada	969	1328	4943	1948	2350	84
Central America	....	460	312	....	....	273
Chile	1	147	....	52	....	20
China	2598	1	....	183	15	....
Columbia	76	357	....	489	....	458
Cuba	10803	1643	275	882	40	716
Europe	....	....	....	....	82	....
Italy	....	....	....	25	....	....
Japan	807	731	6	2541	8331	....
Mexico	253	387	51	243	188	245
Other Countries	1505	668	360	427	95	385
Other Europe	....	136	....	....	....	....
Other South America	8	128	....	....	213	105
Peru	....	....	....	4	....	....
Philippine Islands	837	1383	34	139	29	383
South America	....	....	140	....	....	....
Spain	39	....	....	....	....	....
Venezula	....	....	....	176	....	236

ORIGIN OF FERROMANGANESE AND MANGANESE ORE IMPORTS
Gross tons

Manganese ore from:	
Germany	6
Turkey-in-Europe	..
Netherlands	75
Canada	..
British India	6,060
British West Africa	..
Total	6,141
Ferromanganese from:	
France, including Luxemburg	32
England	3,454
British India	..
Total	3,486

ORIGIN OF PIG IRON IMPORTS
Gross tons

From:	
Netherland	....
France	4,905
Germany	500
Belgium	124
England	4,100
Ireland	....
Scotland	325
Sweden	225
Canada	159
Quebec-Ontario	....
Honduras	....
British India	6,009
China	....
Total	16,347

items showing little change with the exception of rails, boiler plates and wire rope and insulated wire. Rail imports dropped from 9034 tons in August to 1709 tons in September. Boiler plate receipts increased in the same period from 73 to 502 tons, while wire rope and insulated wire showed the largest gain on the import list with a jump from 292 tons to 3904 tons.

Semifinished steel was one of the largest increases in the export list for September, gaining from 5153 tons in August to 14,591 tons in September. Boiler plate, plain structural shapes, barbed wire and wire nails were the only products exported to show much of a decrease from August. Barbed wire exports dropped from 8510 tons in August to 6297 tons in September, while wire nail shipments were cut in half, decreasing from 1085 tons to 527 tons.

IMPORTS OF VARIOUS ORES AND FERROALLOYS

	Nine months ended September			
	1924	1923	1924	1923
Ferromanganese	3,486	8,756	24,896	73,650
Ferrosilicon	92	989	8,280	9,900
Manganese ore	6,269	35,175	204,628	162,413
Tungsten ores	.....	.....	.....	.....
Nickel ore and matte	124	89	3,451	5,268
Total	9,971	45,009	241,255	251,231

ORIGIN OF IRON ORE IMPORTS
Gross Tons

	Nine months ended September			
From:	1924	1923	1924	1923
Spain	14,161	7,100	46,856	191,100
Sweden	76,274	75,542	229,894	674,624
Canada	705	580	2,777	23,959
Cuba	13,396	75,175	221,186	602,176
Chile	39,300	60,000	761,445	437,400
French Africa	36,100	15,300	150,682	290,328
Other countries	1,284	27,912	28,231	77,557
Total	181,220	261,609	1,441,074	2,297,144

IRON AND STEEL IMPORTS
Gross Tons

	September		Nine months ended September	
	1924	1923	1924	1923
Pig iron	16,347	8,353	160,123	336,817
Ferromanganese	3,486	8,756	73,650	24,896
Ferrosilicon	92	989	8,280	9,900
Scrap	7,567	10,608	45,287	151,370
Bar iron	218	512	3,326	6,776
Steel ingots, bars, etc	2,771	2,325	29,947	14,952
Structural shapes	3,201	405	29,440	7,869
Rails	1,709	2,423	33,884	23,522
Boiler and other plates	502	262	3,247	1,574
Sheets and saw plates	122	276	1,988	1,968
Tin plate	17	60	932	96,926
Wire rope and insulated wire	3,904	60	13,154	841
Wire rods	236	828	5,373	3,023
Total	40,172	35,857	408,631	680,434

OTHER IMPORTS
Gross Tons

Tubular products	4,170	260	43,764	3,288
Round iron and steel wire	254	297	2,817	3,052
Castings and forgings	252	148	2,147	2,178
Nails and screws	88	41	376	924
Bolts, nuts and rivets	26	5	133	155
Flat wire and strip steel	255	49	1,742	863
Grand total	45,217	36,657	459,610	690,894

Obituaries

FREDERICK HODGEMAN FOOTE one of the best known iron blast furnace managers of his time, died at Sarasota, Fla., Oct. 20, 1924, at the age of 70 years, Mr. Foote was born in Port Henry N. Y., Sept. 29, 1954, attending the public schools of Port Henry and later at Sheffield Scientific school, Yale university where he was graduated in 1875. Upon leaving college he began his business career in the First National bank, Wyoming, Iowa, of which his father was president for many years, and himself later served many years as president of that bank. He returned to Port Henry in 1879. From 1882 to 1890 he was, successively, superintendent of blast furnaces at Everett and Pottstown, Pa. and Mayville, Wis. From 1890 to 1903 he was associated with the Illinois Steel Co., at Chicago, Ill., first as superintendent of furnaces at the South Chicago Works, later as vice president of the Illinois Steel Co. in charge of all furnaces of that company. During this time he was also a member of the blast furnace committee of the United States Steel Corp., which acted in an advisory capacity upon the operation of all the Steel corporation furnaces.

In 1903 he purchased the blast furnace and iron ore properties at Spring Valley, Wis., which with the assistance of his two sons, he operated until 1911, when he retired from active business.

* * *

Austin H. Pease, vice president and assistant treasurer of the Wason Car Co., Springfield, Mass., died Oct. 21 at his home.

* * *

Samuel Hale, 56, of Kenosha, Wis., formerly vice president of the Interstate Iron & Steel Co. and prior to that with the Wisconsin Steel Co., died at Santa Fe, New Mex., Oct. 25.

* * *

Charles C. Owens, 64 assistant secretary of the Hurd Coal & Iron Co., Cleveland, and for the past 30 years confidential secretary of the legal firm of Squire, Sanders & Dempsey, that city, died Oct. 24 at his home there.

* * *

Patrick B. Delany, inventor and patentee of some 150 devices, chiefly of an electrical nature, died Oct. 19 at his home in South Orange, N. J., of heart disease. He was 79 years of age. He obtained patents for anti-induction cables, synchronous multiplex telegraphy, by which six messages are sent simultaneously over one wire; automatic systems for ocean cables, a talking machine and a device for locating submerged metallic bodies. Mr. Delany received the Elliott Cresson gold medal and also the Franklin institute John Scott legacy medal.

* * *

Leonard Osborne Macdaniel, formerly a director of the Solvay Process Co. and associated with the management of several of its subsidiary corporations, died Oct. 20 at his home in Ashfield, Mass., aged 67. Before going with the Solvay company, Mr. Macdaniel for many years was cashier of the old *New York Sun* under the regime of Charles A. Dana.

* * *

Thomas Key Niedringhaus, vice president of the National Enameling & Stamping Co., and vice president of the Commonwealth Steel Co., St. Louis, who recently resigned from that office with the National company, died in that city Oct. 26, following an illness of two weeks. He was born there 64 years ago. Mr. Niedringhaus remained as a director of the National company and active manager of the branch at Granite City, Ill., following his resignation as vice president. He formerly had been prominent in politics. His father, Frederick G. Niedringhaus, founded the National Enameling & Stamping Co.

* * *

Robert M. Downie, aged 71, secretary and general manager of the Keystone Driller Co., Beaver Falls, Pa., and well known manufacturer of Beaver Valley, died Oct. 23 following an operation at New Brighton, Pa. Mr. Downie was born near Harmony, Butler county, Pa., in 1853. He was graduated from Geneva college in 1881, and later was appointed a member of the board of directors of that institution. In February, 1882 he patented a portable well-drilling machine and was instrumental 40 years ago in organizing the company of which he was general manager. About 20 years ago, manufacture of Mr. Downie's second invention, a deep well pump, was begun by his company. Then, eight years later. his third invention, an excavator, was added to the company's products.

Mr. Downie was one of the originators of the vitrified paving brick, organizing the Fallston Clay Products Co., for producing the brick, in 1889, in New Brighton. He also was connected with the Pittsburgh Wire Co., Downieville, near Beaver Falls.

Steel Industry On New Basis, Says Gary

(*Concluded from Page* 1155)

delay on my part. I think we should find a solution for a time. The establishment of a basing point is not generally, if ever, for the benefit of a city or locality asking for it. Chicago may be independent of these considerations."

Again June 11, 1919, your president wrote to Mr. Miller as follows:

"I now expect to arrange for a meeting between your clients and some of the steel people within the next two or three weeks. I am actively considering the matter. There has been no unnecessary delay on my part. The problem is difficult."

It was later decided by representatives of the iron and steel interests to ask their respective lawyers to meet for discussion of the Pittsburgh plus matters, and they met accordingly. Following their meeting and on June 19, 1919, your president again wrote to Mr. Miller as follows:

"On yesterday, I received a letter from the Hon. William C. Redfield, secretary of commerce, in which he states he has received complaints concerning the maintenance of Pittsburgh as a basing point, and requesting that several other points be included, such as Buffalo, Cleveland and Chicago, and that he had replied that his department had no jurisdiction of the subject and referred to the federal trade commission as being authorized to act in such cases. As president of the American Iron and Steel institute I have received several letters on this general subject, some of them of a complaining character. They have been written from Minneapolis and other places. The American Iron and Steel institute would not be disposed, if it had the right, to represent the steel industry in connection with the discussion pertaining to this matter. I suggest to you that under all the circumstances, it might be appropriate and wise for you and me to visit the chairman of the federal trade commission, and for you to then state the position of your clients and ask the commission to make an inquiry into the subject. I would consent so far as our corporation is concerned. Of course, the whole steel industry ought to be heard in regard to such a matter. You may deem it advisable to come to New York and go from here to Washington."

On July 1, 1919, Mr. Miller telegraphed to your president as follows:

"I will reach New York Monday morning and communicate with you on arrival. Your suggestion will be acceptable to me. If convenient for you to communicate with Washington about hearing, you may do so on my behalf as well as your own, using my name, and I will be prepared to go from New York to Washington as you suggest."

Your president complied with the request of Mr. Miller and they both appeared before the commission at Washington July 9, 1919.

It was supposed by your president that the federal trade commission would include as parties to the proceedings the whole iron and steel industry, and also all others, including various cities and towns, who might be affected by the result. The stand taken by your president with respect to including the entire industry and various localities is definitely and fully shown in Exhibit A. The commission did not adhere to this supposed plan and perhaps might be justly criticised for this failure.

However, in view of all that had taken place, the Steel corporation concluded it would not be justified in refusing to acquiesce in the findings and decree which were finally made.

There would have been one of the biggest legal and official inquiries that has ever occupied the courts or governmental bodies if there had been included every interest affected, as was tentatively agreed to, and the whole subject had been referred to and finally adjudicated by the courts. As before suggested, any member desiring to appeal to the courts may still do so.*

Sees Complete Change

It is believed the entire iron and steel industry will, within a reasonable time, voluntarily be operating on a basis conformable to the opinion rendered by the federal trade commission, notwithstanding the United States Steel Corp. and its subsidiaries alone were made respondents; and that if we are patient and reasonable we shall find, though with perhaps some additional work and cost, the industry, taken as a whole, and including both producers and consumers, will not materially suffer by reason of the elimination of the Pittsburgh plus system.

But for one, your president entertains the opinion that there are involved questions more important than those which are only of a legal nature. What is the fair, the equitable view to take? What is just as between producers and their purchasing acquaintances?

What has been done has caused considerable confusion, some injustice, perhaps some demoralization and unreasonably low returns on investments. But it is to be hoped that all difficulties will readily be overcome and that in these matters, the entire steel industry will have the patience, the energy and the wisdom to solve the perplexities occasioned by the effort to abrogate the Pittsburgh plus and before long return to the position of progress and prosperity to which it is entitled.

If every one of us will persistently deal with all others fairly we shall receive our just deserts. If we charge only reasonable prices, taking into account the amount of investment, risk of business, vicissitudes of trade, depreciation and upkeep, treat our employes with liberal propriety and acknowledge standards of humanity, conserve the interests of our stockholders or owners, act decently and friendly toward our competitors, carefully consider the demands of public sentiment when we know and understand them, and obey the laws of the land when they have been made known, then we may expect to prosper and to receive what is our due.

We can afford ti submit to a public sentiment, however created or brought about, if and when we are not called upon to sacrifice a moral principle. Then maintaining this attitude, when such a sacrifice is demanded, we can stubbornly oppose and defend against it, and expect sooner or later to receive commendation and support.

The highest and best rewards come from honest and proper practice. Bad results in the long run come from selfish, unfair and dishonest conduct.

According to the newspaper reports, based on information gathered from usual sources, confirmed by much additional testimony there has been a persistent, though somewhat irregular, growth in the volume of business generally throughout the United States since May, 1924.

The subsidiary companies of the corporation which possess something less than one half the capacity of all manufacturers in the United States, sold about 2000 tons per day more of steel in June than in May, about 6000 more tons per day in July than in June, about 10,000 more tons per day in August than in July, about 6000 tons per day more in September than in August, and about 5000 tons per day more for the first 17 days of October than for the first 17 days of September.

The future success of the iron and steel industry in this country is assured if the managers will keep their heads, and further if the approaching election results shall be satisfactory. As to the first proviso, we have the opportunity and the responsibility. As to the second, it is for the majority of the national electors to determine whether or not they desire continued prosperity. All of us, all the people of the United States, must together enjoy prosperity or suffer from adversity.

In this greatest of all nations, with largest opportunities for worthy achievement and human happiness, there is possibility of suicidal action or neglect that will cause immeasureable loss and suffering to multitudes.

But sentiments of self-protection will influence the large majority of voters to give careful thought to the best interests of the country and to themselves, and they will therefore wisely discriminate and decide. In this most important, if not critical, period in our history, they can be depended upon to act with prudence.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

AMONG the industrial contracts, recently booked by the Austin Co., Cleveland, engineer and builder are a wire drawing plant for the Detroit Insulated Wire Co., Detroit, a metal storage warehouse for the Briggs Mfg. Co., Detroit, a phenolic condensation plant at Newark, Del., for the Continental Fibre Co., manufacturer of vulcanized rubber, and printing plants for the Art Color Printing Co., Dunellen, N. J.; *News-Tribune,* Wilmerding, Pa.; *Plimpton-Press,* LaPorte, Ind., *Willard Times,* Willard, O., and the Telegraph Printing Co., Harrisburg, Pa.

* * *

INCORPORATION of the business of Harry A. Jaffe, New York, recently was effected. The company conducts an appraising and auctioneering business. Capital of the company was set at $20,000 in the incorporation papers drawn up by Walter & Wolff, 2 Rector street, New York.

* * *

GOVERNMENT officials of Ontario have awarded contracts for the construction of an airdome for the airplanes of the foresty air service of the Canadian government. The contracts for structural steel and erection were awarded the Hamilton Bridge Works Co., and that for reinforcing joists to the Sarnia Bridge Co.

* * *

A $500,000 corporation known as the Frank Hamachek Machine Co. has been incorporated in Wisconsin as the successor to the extensive agricultural machinery and implement manufacturing business established many years ago by Frank Hamachek, who with his son, Frank Hamachek Jr., will retain the active management and control of the business.

* * *

REBUILDING of some of the old buildings of the Steel Co. of Canada, Ltd., Hamilton, Can., has been undertaken. The old buildings at the Swansea plant which have been out of repair, will be modernized. The company does not expect an increased output to result from the betterments, but merely an improvement in plant conditions.

* * *

MICHIGAN WHEEL CO., Grand Rapids, Mich., manufacturer of propeller wheels, shafting and various bearings, joints, etc., recently changed management. C. J. Titscher now is president, J. Webber, superintendent and H. DeVries, manager. The company is operated by the Riverside Brass & Aluminum Foundry Co., Grand Rapids. Contract work is taken in addition to regular production.

* * *

THE former partnership of Pollard Bros., Chicago, has been reorganized as the Pollard Bros. Mfg. Co., 4034 North Tripp avenue with a capital of $25,000. In addition to manufacturing angle steel welded bench legs, bar stock racks and light structural steel products, the company will make park benches and radio equipment. No additional equipment is being bought at this time.

* * *

HERBERT NELSON has disposed of his interest in the Frankfort Machine Works, Frankfort, Ind., to H. Wills, H. B. Upham and William F. Rose. Charles Bowers, who has been associated with Mr. Nelson, retains his interest in the company. Under the new management Mr. Upham will be president, Mr. Bowers vice president, Mr. Wills secretary and treasurer. William Rose will be manager and superintendent of the shop.

* * *

RESUMPTION of production of portable motion picture machines is forecast by the announcement of the incorporation of the Drop-Head Projector Corp., Fond du Lac, Wis., as successor to the bankrupt Drop Head Projector Co., the entire assets having been sold by the trustee to a new group of capital represented by A. F. Zarlock, F. Kastorff and W. N. Tennant of Fond du Lac. The capital stock of the new corporation consists of 6250 shares of no par common and $125,000 preferred stock. Work in preparing the plant for production is now going on.

* * *

TWIN-HIGH SALES CORP., Fisk building, New York, recently was incorporated to sell transmissions for automobiles. The transmissions will be built under contract for the Twin High Transmission Co., which owns and controls all patents, by the New Process Gear Co., Syracuse, N. Y. The Twin-High Sales Corp. will distribute the product in Pennsylvania, Maryland, Delaware, New Jersey and Connecticut, 12 counties of New York, Missouri, Kansas, Oklahoma, Arkansas, Minnesota, Wisconsin and Iowa. W. L. Rowe is head of the new corporation.

* * *

STEAM fittings, boiler mountings and general brass finishings will be manufactured by the B. C. Valve Co., Ltd., 513 Standard Bank building, Vancouver, B. C. The company was incorporated in January. It just recently has awarded contracts for constructing a modern electrically equipped foundry and machine shop, 2-story, 51 x 173 feet. Quotations for foundry and machine shop equipment already have been submitted to the company. A small electric steel furnace also will be installed. Orders for equipment are to be placed about Nov. 1.

* * *

A COMPACT, portable electroplating outfit no longer than an ordinary flat iron, which has been developed and patented by P. J. F. Batenberg of Racine, Wis., will be manufactured by the Blue Point Mfg. Co., a new division of the Motor Tool Specialty Co., Chicago. It has leased space in the Sattley building at Racine Junction and now is building the tools and special machinery required for the plant. Mr. Batenberg formerly was the chief engineer of the old Mitchell Motors Co., Racine, and previously held the same position with the Four Wheel Drive Auto Co., Clintonville, Wis. The plater is especially made for repair work, replating and retouching plated articles.

* * *

RECENT awards for river improvement work have come to manufacturers in the Pittsburgh district. H. P. Gazzam Machine Co. received a contract to furnish river wall valves for lock No. 49 and No. 50, Ohio river. There is a total of 175,508 pounds of cast iron; 43,408 pounds of cast steel and 3372 pounds of phosphor bronze. The chief of engineers also approved the award of the Louisville district to the Stroh Steel Hardening Process Co. of a contract to furnish 19,744 pounds of steel castings for locks No. 40 and No. 50, Ohio river. The J. & J. B. Milholland Co. received a contract from the Louisville district for the delivery of 13,758 pounds of steel reinforcing bars and 5000 pounds of miscellaneous steel for locks No. 49 and No. 50. The total amount, exclusive of bronze, amounts to more than 123 tons.

Tool Recovery Slow and Spotty

New York District Dealers Report Another Dull Week but Pittsburgh, Boston and Chicago Territories Reflect Spotty Improvement—Few Large Lists Now Are Active —Used Equipment Sales Quieter—Alliance Machine Co. Books More Cranes

SPOTTY improvement is noted in some machine tool market centers. New York dealers report another dull week, with election uncertainty growing as a factor in the present hesitant market. Miscellaneous sales of small tools continue to constitute the major portion of present activity, few lists of any consequence being at present in the market.

The feature of railroad business is the inquiry by the Rock Island for 18 woodworking tools and that of the Maine Central, which is prepared but not issued. Considerable business undercurrent is reported in Pittsburgh, where a favorable election result may develop fair activity before the end of the year. School board activity centers in the inquiry from the board of education at Cleveland for 68 machine tools for machine and pattern shops in a new high school to be constructed there.

Used equipment sales are quieter, although shoppers' activity has not abated greatly. Price competition on standard tools continues keen.

Alliance Machine Co. booked five cranes for the Lackawanna plant of the Bethlehem Steel Co., this business being in addition to seven cranes awarded that builder by the Bethlehem company several weeks ago. Crane inquiries are more numerous and a slight betterment in sales is reported by many builders.

Election Hesitancy Grows More Pronounced

NEW YORK, Oct. 28.—With few rare exceptions, machine tool dealers in this district report another dull week. In virtually all instances, business has been confined to orders for single machines. One dealer reports the sale of several large milling machines, within the past week, to different purchasers.

The General Electric Co. is inquiring for two radial drills for its service shop at Schenectady, N. Y., and the Pennsylvania railroad is inquiring for a small alligator shear for its shop at Altoona, Pa. The Missouri Pacific has closed on a 100-ton bushing press with an eastern builder. Award of the 13 machine tools previously noted as pending for the board of education, Bayonne, N. J., will probably not be made for several weeks, according to present indications. E. I. du Pont de Nemours, Wilmington, Del., are closing on six or seven miscellaneous machines for their Nashville, Tenn., plant.

Crane orders are in slightly better volume, but as a whole, trading is still dull.

School Board Inquiry Active

CLEVELAND, Oct. 28.—Inquiry for 44 tools for high school machine shops and 24 machines for pattern shops, for the new Collinwood school sent out to various manufacturers by the local board of education, features new inquiry in this district. Much of the equipment desired is woodworking and motors but many metalworking tools are included. Bids on this equipment are scheduled for closing Nov. 10.

Railroad buying here is negligible. Several tools were sold last week to automotive interests in Detroit, but the volume of buying from that source still is far below normal.

Used equipment activity has slackened somewhat. Many shoppers still are in the market, but few are seeking quick purchases of machinery. Price competition on standard tools is keen.

Interest in the crane market in this district again is featured by bookings of the Alliance Machine Co., Alliance, O. Five cranes for the Lackawanna plant of the Bethlehem Steel Co. were booked by the Alliance company during the past week, three being standard cranes and two being 10-ton slab charging machines. This order is in addition to seven cranes for the Lackawanna plant booked by the Alliance Machine Co. during the last week of September.

Several Good Inquiries Out

CHICAGO, Oct. 28.—The Chicago Rock Island & Pacific railroad has issued a list of 18 woodworking tools for its shops at Shawnee, Okla., including two rip saws, two cutoff saws, a 16 x 20-inch wood planer, 12 and 16-inch jointers, a 42-inch band saw, a wood turning lathe with a 12-inch swing and 8-feet between centers, a 4-spindle horizontal boring machine and a 4-foot machine molder and matcher. Chicago machinery houses have received a list from the Cleveland board of education, 44 tools for high school machine shops and 24 tools for pattern shops, including 22 lathes 13-inches x 5-feet, a 16-inch crank shaper, a 16-inch back geared shaper, a universal shaper and a 14-inch sensitive flow drill. The A. O. Smith Co., Milwaukee, is understood to have placed several lathes for its tool room.

It is reported that the Nash interests behind the new Ajax Motors plant at Racine, Wis., will issue a list of standard tools in about two weeks. Stove manufacturers have been fair buyers of punch presses. A radio manufacturing interest has placed a turret lathe. A Chicago manufacturer is in the market for three punch presses. Machine tool business generally is spotty, some dealers experiencing good business while others find inquiry at a low point.

A Chicago machinery house has placed a centerless grinder, an 18-inch x 8-foot lathe, a 16-inch shaper, a 20-inch drill and a 5 horsepower emery grinder. Cedar Rapids Foundry & Machine Co., Cedar Rapids, Iowa, is in the market for a used surface grinder and punch press with at least a 2-inch stroke.

Market Is Recovering Slowly

BOSTON, Oct. 28. — Tool sales throughout New England continue to show slight improvement. In Boston two leading dealers have had the best week since Oct. 1. Sales and inquiry are scattered with few long lists now out. The Maine Central railroad has a list prepared but it is not definitely before the trade. The General Electric Co. has a long list of tools needed at Lynn and Pittsfield, Mass., but appropriation is lacking and buying against the list is not expected until after Jan. 1. A textile machine manufacturer bought a planer and a grinding machine. A Connecticut hardware manufacturer bought four tools including a shaper. Several tools were

placed with a greater Boston machine shop, and other sales are reported by Maine, New Hampshire and Massachusetts manufacturers. New England machine tool manufacturers while being far from rushed are finding the national demand gradually improving. One manufacturer of small lathes has recently received a sizable order from the Chicago district. Prices are unchanged.

More Business Is Active

PITTSBURGH, Oct. 28.—Considerable under-the-surface activity is encountered in connection with machine tools and equipment although large sales are rare. Several lists are before the trade, most of which are small, including the Westinghouse Electric & Mfg. Co., East Pittsburgh, four machine tools, with some woodworking equipment; the Standard Steel Car Co., Butler, Pa., plate-working equipment; Central Tube Co., Economy, Pa., various types of equipment; Reeves Bros. Co., Alliance, O., structural shop machinery for new plant at Birmingham, Ala. Pennsylvania railroad issued a small inquiry for two machines and a fair sized list is expected shortly from the Aetna Foundry & Machine Co., Warren, O., which is building an addition to its machine shop. Recent sales include two large axle lathes to an eastern Pennsylvania steel maker, and a 42-inch boring mill to the Carnegie Steel Co., Homestead, Pa. Included among the sales last week by one dealer who states that October so far has been the best month since last April, are the following: Motor-driven riveting machine, a 4-inch pipe machine, small shear, and a combination hand-power punching and shearing machine. Considerable equipment remains to be purchased on the Carnegie Steel Co.'s $25,000,000 expansion and improvement program under way at Homestead and Carrie works, and car dumpers, transfer cars, cranes, etc., still are pending.

Used machinery is finding a ready sale and one dealer reports that while sales all are small, they are more numerous than in many weeks past, and another states that this month so far is better than either August or September from a sales standpoint. Dealers report that many users go direct to sellers and are not conducting negotiations through dealers. Some large sales recently have been made direct at the plant of the Pittsburgh Model Engine Co. here as well as at the plant of the Barney-Smith Car Co., Dayton, O. Some inquiries have disappeared because those issuing them were not successful in obtaining the work they were bidding upon. Other inquiries for large single machines are current and the dealers are having difficulty in locating them.

Several crane inquiries still are out and others lie dormant, the latter including some locomotive cranes. The National Tube Co. has the appropriation for the ore bridge at Lorain, O., and this may be placed shortly but it has to wait for an appropriation for its ore bridge purchase for McKeesport, Pa. The Carnegie Steel Co. has purchased additional crane equipment for Mingo Junction, O., as well as for Homestead, Pa.

Quieter Conditions Apparent

CINCINNATI, Oct. 28.—A tendency toward quieter conditions is apparent in the machine tool market. A few sellers of new equipment report moderate inquiry from scattered districts, some of which give outward signs of developing into actual business. On the other hand some sellers of machine tools denote the market as dull with no prevailing inquiries to change the tone of conditions that have existed during the past few weeks. Sales of used machinery are difficult to close, even though the bulk of the few reported consists of odds and ends and small items as bench lathes and drills, in some districts, particularly in Indiana and Kentucky inquiries show better volume but it is difficult to obtain action in view of the uncertainty of the forthcoming presidential election. Inquiry being issued is for single items although frequently one for good sized equipment is brought out. One seller this week reports the sale of a large boring mill to a shipbuilding company in the eastern district.

Crane Awards and Inquiries of the Week

Orders Placed

Eight 10-ton, double trolley cranes, 85-foot span, for the Lackawanna plant of the Bethlehem Steel Corp., Bethlehem, Pa., to the Cleveland Crane & Engineering Co.

Five cranes for the Lackawanna plant of the Bethlehem Steel Co., Bethlehem, Pa., to the Alliance Machine Co., Alliance, O. Two 15-ton standard cranes with 75-foot spans, two 10-ton slab charging machines with 61-foot spans, and one 25-ton standard crane with 37-foot span.

Five 1-ton underhung handpower cranes for the Excell Foundries, Lebanon, N. J., to the Chisholm-Moore Mfg. Co.

Four cranes for the new mill of the Wisconsin Steel Co., subsidiary of the International Harvester Co., Chicago. One 75-ton crane and a 50-ton traveling crane to the Morgan Engineering Co.; one 30-ton crane to the Cleveland Crane & Engineering Co., and a 10-ton crane to the Whiting Corp.

Two 20-ton locomotive cranes for the Newport News Shipbuilding & Drydock Co., Newport News, Va., placed, the award reported as going to the Browning Co.

Two 2-ton electrically driven underhung cranes, and 1000 lineal feet of runway for a warehouse, New York, to the New Jersey Foundry & Machine Co.

Two 10-ton electric overhead cranes for the Morgan Construction Co., Worcester, Mass., to an unnamed builder.

Two 10-ton and two 2-ton handpower cranes for the New Jersey Zinc Co., New York, to an unnamed builder.

Two 20-ton, 1-motor cranes, 30-foot span placed by the Phoenix Utilities Co., 65 Broadway, New York, for a plant in Cuba, to Alfred Box & Co.

Two 10-ton electric cranes, 50-foot span, for the United States Cast Iron Pipe & Foundry Co.'s plant at North Birmingham, Ala., to the Pawling & Harnischfeger Co.

Several 3 and 5-ton hoists and 700 feet of monorail track for a power plant for the New York Edison Co., New York, to the New Jersey Foundry & Machine Co.

Several 3 and 5-ton hoists, with 700-foot monorail, for the Hell Gate station of the United Electric Light & Power Co., to the New Jersey Foundry & Machine Co.

Single Installations

40-ton electric crane, 36-foot span for the California-Oregon Power Co. for installation at Thall, Cal., to an eastern builder.

40-ton gantry crane, 35-foot span for the Canadian National railways for installation at Blackrock, N. Y., to an eastern builder.

25-ton trolley for the Carnegie Steel Co., Homestead, Pa., to the Shaw Electric Crane Works, Muskegon, Mich., through Manning, Maxwell & Moore, Inc.

25-ton locomotive crane for the St. Charles Sand & Gravel Co., St. Charles, Mo., to the American Hoist & Derrick Co.

20-ton, 4-motor crane, 51-foot, 9-inch span, for a foundry at the Lehigh, Pa., plant of the Bethlehem Steel Corp., to the Alliance Machine Co.

15-ton power hoist crane for the Carnegie Steel Co., Mingo Junction, O., to the Northern Engineering Works.

10-ton electric crane, 96-foot span, for a foundry yard at Schenectady, N. Y., plant of the American Locomotive Co., to the Shaw Electric Crane Co.

5-ton electric overhead crane for the Hunt-Spiller Mfg. Corp., South Boston, to the Shepard Electric Crane & Hoist Co.

5-ton used overhead crane, 46-foot 6-inch span, for the R. S. Christie Co., Elizabethport, N. J., to an unnamed seller.

5-ton electric crane, 60-foot span for the Edwin Shuttleworth Co., Long Island City, N. Y., to the Shaw Electric Crane Co.

Three-quarter yard caterpillar crane for the Norton Sand Co., at the foot of Sixty-first street and the East river, New York, to the Bucyrus Co.

Three-quarter-yard gasolene shovel for Edward C. Gahagan Jr., Philadelphia, to the Pawling & Harnischfeger Co.; the shovel is for approach work in connection with the Philadelphia-Camden bridge over the Delaware river.

Orders Pending

20-ton crane, Modern Foundry Co., Oakley, Cincinnati, O.; bids being taken.

15 to 20-ton electric traveling crane for E. W. Cooper, 174 Third avenue north, 50 to 60-foot span, two to three motor, alternating current, 220 volts; pending.

10-ton locomotive crane for the National Tube Co., McKeesport, Pa.; early action expected.

10-ton locomotive crane with long span, involving expenditure of about $300,000 for the National Tube Co., Lorain, O.; bids being considered.

5-ton electric traveling crane for Ducommun street shop of city of Los Angeles; bids in.

Recent Industrial Business Changes

THE Chemical Engineering & Foundry Co., Atlanta, Ga., announces the removal of its New York sales office, from 1042, 70 East Forty-fifth street, to its own quarters at 913, 52 Vanderbilt avenue at Forty-fifth street, with Robert S. Beecher, New York sales manager, in charge of the office.

* * *

Sherman Machine & Iron Works is the name of the former N. S. Sherman Machine & Iron Works, Oklahoma City, Okla.

* * *

Fox-Meade Iron Co., Inc., Brooklyn, N. Y., has filed papers with the state department petitioning a change in its corporate name to the Fox Steel & Iron Co., Inc.

* * *

Industrial R. R. Repair & Construction Co., Cleveland, has opened offices at 576 Rockefeller building, that city, which it will maintain in addition to its yards which are equipped for all track repair work.

* * *

The National Foundry Supply Co., 143 Federal street, Boston, has been appointed New England agent for the Cleveland Flux Co., manufacturer of cupola flux, and brass and aluminum fluxes of various kinds.

* * *

The United States Aluminum Match Plate Co., 1265 West Seventy-sixth street, Cleveland, recently has moved into larger quarters. The company manufactures brass pattern castings in addition to aluminum match plate pattern and casting work.

* * *

The Sandusky Foundry & Machine Co., Sandusky, O., has changed its name to the Paper & Textile Machinery Co., as the latter name more nearly reflects the company's products. No change in ownership or policies will be made. D. Lake is treasurer.

* * *

The Federal Corp., 304 Lexington Ave., Pittsburgh, has acquired the Butler Foundry, Butler, O., and will continue to operate it, making iron toys, small stove parts, plumbing castings, brake shoes, etc. The foundry will be enlarged to take care of anticipated requirements. J. H. Hall is superintendent.

* * *

Banks Supply Co., Huntington, W. Va., mechanical and electrical supply and machinery dealer, in its recent purchase of the Miller Supply Co., acquired the Bluefield Supply Co., and not the Bluefield Hardware Co., Bluefield, W. Va., as previously stated. The Banks company since has sold its interest in the Bluefield Supply Co.

* * *

Northwest Engineering Co., 28 East Jackson boulevard, Chicago, builder of cranes, draglines and shovels, has arranged with the Beckwith Machinery Co., 500 Arch street, Pittsburgh, for the latter company to handle the Northwest products in that city. Collins-Kay Co. now will represent the Northwest company in Los Angeles. An office has been established at 23 Main street, San Francisco, in charge of W. W. Mutter, by the Northwest Engineering Co.

* * *

Illinois Alloy & Mfg. Co., Chicago, has changed its name to Williams Alloy Products Co., and increased its capitalization from $150,000 and 1500 shares no par stock to $150,000 and 5000 shares no par value stock.

New Construction and Enterprise

Where additional information is presented, reference is made to date of issue in which previous item appeared.

PHOENIX, ARIZ.—Santa Fe railroad plans constructing car shops and a round house here. C. F. W. Felt, Railway Exchange building, Chicago, is chief engineer.

OAKLAND, CAL.—General Electric Co., 5441 East Fourteenth street, has awarded contracts for constructing 1-story plant on East Fifty-fourth street.

FORT COLLINS, COLO.—A large oil refinery will be constructed here on a 40-acre site recently acquired. Machine shop and other equipment will be purchased. Dr. D. O. Norton, O. H. and N. E. Bonner are interested in the new company.

BRIDGEPORT, CONN.—The Marcian Chain Co., 829 Connecticut avenue, is reported as inquiring for chain testing machinery.

BRIDGEPORT, CONN.—The Connecticut Electric Mfg. Co. has acquired land adjoining its plant where it plans further expansion.

NEW HAVEN, CONN.—The Marsden Steel Co., Inc., has been organized with Philip Sellers, as president.

NEW HAVEN, CONN.—The National Welding Co. plans constructing a 1-story, 42 x 100-foot brick plant addition.

ATLANTA, GA.—Bolling Jones and associates are razing buildings on the site which is to hold their 6-story, 150 x 200-foot reinforced concrete garage, for which Lockwood, Greene & Co. are engineers and architects.

CHICAGO—A. Epstein, 2001 West Pershing road, has drawn plans for a 1 and 2-story shop, to cost $230,000 in the central manufacturing district for the American Bolt Corp., 1732 North Kolmar avenue.

CHICAGO—The Pullman Car & Mfg. Corp., 79 East Adams street, has awarded the Sumner-Sollitt Co., 225 North Michigan avenue, general contract for a 1-story concrete and steel car finishing shop at Pullman, Ill.

CHICAGO—Mid-City Metal Spinning & Stamping Co., 426 South Clinton street, has been incorporated for $10,000 to manufacture brass, steel, copper spinnings and stampings and to operate a machine shop. Thomas Howard, Henry Simonson and Louis Simonson are incorporators.

CHICAGO—Hopp, Patterson & Co., 118 West Ohio street, has been incorported for $25,000 to manufacture and deal in industrial equipment and supplies, and to render an engineering service, by J. H. Hopp, J. B. Patterson and Livingston E. Osborne.

CHICAGO—Lindberg Steel Treating Co., Inc., 413 North Carpenter street, has been formed with 500 shares no par value stock, to manufacture and deal in machinery, tools and appliances, with Axel N. Lindberg, M. F. Cargill and Henry D. Donahoe as incorporators. Netherton & Netherton, Marquette building, are listed as correspondents.

CICERO, ILL.—Midland Structural Steel Co., 1300 South Fifty-fourth avenue, is reported as seeking a radial press with 12 or 14-foot arm for heavy reaming and drilling structural columns.

ELKHART, IND.—Harter Rolled Metal Products Co. has been incorporated for $50,000 to manufacture metal tubing, metal sections, channel irons and similar products, by Evan C. Harter, Martin E. Crow, and Edward C. Crow. The company will occupy part of the plan of the Engnan-Matthews Range Co.

CEDAR RAPIDS, IOWA—Cedar Rapids Foundry & Machine Co., Inc., is in the market for a used surface grinder and a punch press with at least a 2-inch stroke.

FORT DODGE, IOWA—The Ajax Fence Co. is inquiring for cutting, bending and finishing equipment for its new plant.

KANSAS CITY, KAN.—Fairfax Iron &

Steel Co. is completing its iron and steel foundry and warehouse, first unit of which is 140x 360-foot will be in operation Nov. 1. Company will manufacture steel, malleable, gray iron castings and railroad frogs. Walter W. Shaw is president.

MONROE, LA.—Arkansas Light & Power Co. plans construction of a 100,000 horsepower electric power generating station to generate electricity from natural gas. The new station will be located at Sterlington, La., on the Ouachita river and will be equipped with turbo-generators of 20,000-horsepower capacity each. Construction is to start at once with ultimate completion of the project in ten months. H. C. Couch, Pine Bluff, Ark., is president.

NEW ORLEANS—General American Tank Car Corp. has arranged for erecting a large plant in this district, on a 230-acre site fronting 1300 feet on the Mississippi river. Henry Donovan is general manager of the corporation.

SWARTZ, LA.—Plant of Monroe-Louisiana Carbon Co. was damaged by fire recently. New machinery equipment, etc., needed.

PORTLAND, ME.—Harris-Sims Co. has been incorporated with $10,000 capital, to deal in steel, iron and other minerals, with Harris Sims as president.

SANFORD, ME.—Sanford Garage Co., is inquiring for automobile repair shop equipment.

CUMBERLAND, MD.—The N. & G. Taylor Co. is inquiring for 1300 tons of structural steel for mill replacements here. The company manufactures tin plate.

BOSTON—Union Realty Co., 100 Cummington street, is in the market for equipment for a machine shop on Linden street.

BOSTON—The United States government, superintendent of plants, navy yard, is receiving bids for the construction of a foundry at the navy yard, Charlestown, at an estimated cost of $40,000.

BOSTON—East Boston high school plans installing metal and woodworking machinery and equipment in a new manual training department. The schoolhouse department, city hall, is in charge.

BROCKTON, MASS.—M. Goodman, 25 Pleasant street, is inquiring for equipment for an automobile repair shop on Main street.

CLINTON, MASS.—Wickwire Spencer Steel Corp. is in the market for some equipment and machinery for its planned plant enlargements.

FALL RIVER, MASS.—The Waycross Co., has been chartered with $100,000 capital to manufacture automobile accessories, by David Fishman, Joseph E. Delehanty and Joseph Edward Lajoie.

READING, MASS.—The Boston Radiolite Battery Co. has been incorporated for $25,000 by Arthur S. Cook, Samuel P. Hadley and Amasa C. Gould.

SPRINGFIELD, MASS.—Olmstead Corp. has been incorporated for $250,000 to manufacture and deal in textiles, boxes and machinery by Otto B. Olmstead, Wallace L. Gladding and John T. Storrs.

WORCESTER, MASS.—The Morgan Construction Co., 14 Belmont street, is having plans prepared for the construction of a 1-story, 150x 250-foot plant on Belmont street for the manufacture of mill machinery, at an estimated cost of $65,000.

DETROIT—A. N. Haskell, 2924 Lakeview avenue, is reported as seeking used equipment including shapers and radial drills.

DETROIT—Detroit Insulated Wire Co. has awarded the Austin Co., Detroit, Cleveland and Chicago, builder and engineer, contract for a new wire drawing building, of sawtooth construction. The construction and material purchases will be made through the Chicago office of the Austin Co.

DETROIT— F. Jos. Lamb Co., 1938 Franklin street, manufacturer of precision tools and gages, is in the market for a used surface grinder, No. 16, manufactured by Blanchard Machine Co., Cambridge, Mass., direct motor driven, 220-volt, 60-cycle and three phase motor.

JOPLIN, MO.—Whitaker Co., Labor Temple, West Sixth street, is inquiring for power driven wood and metal lathes.

ST. LOUIS—St. Louis Casting Co., 118 Malt street, is inquiring for a 200 to 300-ton hydraulic vertical press.

STARK CITY, MO.—Stark City garage, controlled by Chapman Bros., is in the market for a power drill press and air compressor tank.

WENTWORTH, MO.—M. P. Gerbing is in the market for a drill press and lathe for a machine shop and automobile repair shop.

PENNSVILLE, N. J.—The Ethyl Gasolene Co., Deepwater Point, N. J., a subsidiary of the E. I. DuPont deNemours Corp., has plans under way for the construction of a 5-story, 68x140-foot building, at an estimated cost of $700,000, for the exclusive use in the manufacturing of ethyl gas, a new fuel for automobiles.

ALBANY, N. Y.—Cox Brass Mfg. Co. has been incorporated for $25,000 to manufacture and deal in brass products, by T. M. Cox, G. E. Way and J. C. Watson, with Frost, Watson & Cass, as attorneys.

BRONX, N. Y.—Paramount Iron Works, has been incorporated for $5000 to manufacture and deal in iron products, by M. L. Zellermayer, M. Lipack and M. Kurman, with M. Saikler, avenue A, as attorney.

BROOKLYN, N. Y.—Por-Cell Mfg. Co. has been incorporated for $100,000 to manufacture electrical machinery, by I. and B. Beck and E. Kameny, with Weisman & Saperstein, 150 Broadway, as attorneys.

BUFFALO, N. Y.—Pillsbury Steel & Iron Co. has been incorporated for $5000 by P. G. Smith, I. Rabinovitz and F. LaBarbara, with Coonly & Sapowitch as attorneys.

NEW YORK—Bloch Bros. Mfg. Co. has been incorporated for $5000 to manufacture metal products, by A., B. and H. Bloch, with C. R. Failing, 16 Liberty street, as attorney.

NEW YORK—New York Edison Co. has filed plans for a 1-story power house to be constructed at 801 East Fourteenth street. Thomas E. Murray, Inc., is architect.

NEW YORK—Productive Machine Tool & Parts Co. has been incorporated for $50,000 to build and deal in machinery, by A. Paar, H. A. Shapiro and L. W. Wasser, with C. Segal, 270 Madison avenue, as attorney.

NEW YORK—Electric Corp. has been incorporated for $1,000,000 to manufacture electrical refrigerating machinery, by C. J. Gass, R. McCormick and M. P. Datels, with Bingham, Englar and Jones, 64 Wall street, as attorneys.

NEW YORK—Toro Mfg. Co. has been organized with $100,000 capital, to manufacture gas shut-off valves, by T. White, S. Fein and L. J. Kreigel, with S. Shereff, 291 Broadway, as attorney.

NEW YORK—Plans have been completed for the construction of a $10,000,000 hospital project at 165th street and Broadway. This structure will be 14 stories high and comprise about 20 acres. Its erection will be a joint undertaking of the Presbyterian hospital and the College of Physicians and Surgeons of Columbia university.

OGDENSBURG, N. Y.—Work is progressing rapidly on the plant of the Coplan Steel Co. Steel work on the 85x300-foot building is completed.

ONEIDA, N. Y.—Natural Voice Talking Machine & Radio Cabinet Co., has been chartered with $175,000 capital, to manufacture radio equipment and other accessories by F. Wyker, B. and R. Ferrara, with W. W. Wilcox, Onedia, as attorney.

QUEENS, L. I. N. Y.—Guaranteed Sheet Metal & Stove Works, Inc., has been formed with $10,000 capital, to manufacture and deal in metal products, by Herman Blatt, 47 Dumont avenue, Brooklyn, Sol Brandes, 1253 Franklin avenue, Bronx, and Ida Brandes, 1001 Fifth avenue, College Point, L. I.

ROCHESTER, N. Y.—The Mac Tool Co. has purchased the plant formerly occupied by the Everyday Piston Ring Co. and plans additions to the new buildings.

ROCHESTER, N. Y.—Rochester Bean Snipper Co. has been organized for $25,000 to manufacture machinery and equipment, by J. and J. W. Strauss and W. R. Bergin, with M. E. Gibbs, as attorney.

FRANKLIN , N. C.—The city has issued $300,000 of bonds for constructing hydroelectric power plant on the Little Tennessee river, to develop between 2000 and 3000 horsepower.

CANTON, O.—Canton Bridge Co. was damaged by fire recently with slight loss to the tool department. Guy C. Hiner is president of the company.

CINCINNATI—Ohio Brass & Copper Co. has awarded Ferro Concrete Construction Co. contract for plant on Post Square, 3 stories high, to cost about $100,000. Work will be started as soon as temporary quarters are obtained.

LOCKBOURNE, O.—Rail-Light Co. plans a $6,000,000 power house here, on the Scioto river about 10 miles south of Columbus. Clarence C. Slater, general manager of the company, refuses to comment on the project.

MINERVA, O.—Volotone Mfg. Co., is inquiring for metalworking machinery to equip a new shop for the manufacture of radios. P. L. Pennock, is manager.

TOLEDO, O.—Art Iron & Wire Works has commissioned Mills, Rhines, Bellman & Nordhoff to draw plans for a 2-story plant which will double the capacity of the Art Iron works.

BARTLESVILLE, OKLA.—The Vinita, Bartlesville & Western railroad has been organized to build a railroad from Vinita to Bartlesville, 50 miles, and probably westward to Ponca City, Okla. C. E. Burlingame, Empire bldg. is president of the company which will build the line. All kinds of railroad construction equipment etc. needed.

WELEETKA, OKLA.—Oklahoma Power Co. will erect a large power plant to serve the oil field territory in this section. H. F. Cameron, care Public Service Co., Commercial building, Tulsa, Okla., is general manager.

CORRY, PA.—Corry-Jamestown Mfg. Co., manufacturer of sheet metal specialties, has awarded contracts to Chapman & Graham, Jamestown, N. Y., for building a 4-story plant addition. O. Johnson, Jamestown, is architect. *Noted Oct. 23.*

FRANKLIN, PA.—A foundry, 80 x 260 feet is being constructed at Sugarcreek, near the Estergreen place, with a siding on the Erie railroad. The building will be equipped with modern machinery and used as a foundry for gray iron castings. Dell Jolley, Samuel Holmes and Jack Williams are reported to head the company, which has not as yet been named.

PHILADELPHIA—The United States government plans to erect a boiler house at Twenty-first and Oregon streets.

PHILADELPHIA—The Truscon Steel Co. plans to erect a storage warehouse at Tacony and Lewis streets for William & Harvey Rowland, Inc.

SELLERSVILLE, PA.—Derstine Bros. are

(*Continued on Page* 1190)

Warehouse Steel Prices

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.00c
New York	3.24c
Philadelphia	3.10c
Pittsburgh	2.90c
San Francisco	2.85c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.35c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.10c
St. Louis	3.15c

REINFORCING BARS

Boston	3.25c to 3.50c
Buffalo	3.40c
Chicago	2.00c to 2.15c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles, C. L.	3.60c
Los Angeles, L. C. L.	4.00c
New York	2.80c
Philadelphia	2.75c to 2.85c
Pittsburgh	2.15c to 2.25c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.00c
New York	3.34c
Philadelphia	2.95c
Pittsburgh	3.00c
San Francisco	3.00c
Seattle	3.35c
St. Louis	3.25c
St. Laul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.20c
Detroit, 3/16-inch	3.45c
Los Angeles	3.00c
New York	3.34c
Philadelphia	2.95c
Philadelphia, 3/16-inch	3.12c
Pittsburgh	3.00c
San Francisco	3.00c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	4.05c
Chicago	3.80c
Cincinnati	3.90c
Cleveland	3.45c to 3.76c
Detroit	3.95c
Los Angeles	4.05c
New York	3.89c
Philadelphia	3.75c
San Francisco	3.95c
Seattle	4.50c
St. Louis	3.90c
St. Paul	4.05c

NO. 28 BLACK SHEETS

Boston	5.00c
Buffalo	4.75c
Chicago	4.50c
Cincinnati	4.55c
Cleveland	4.35c to 4.55c
Detroit	4.65c
Los Angeles	5.15c
New York	4.60c
Philadelphia	4.75c
San Francisco	5.00c
Seattle	5.50c
St. Louis	4.65c
St. Paul	4.85c

NO. 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	5.85c
Chicago	5.50c
Cincinnati	5.65c
Cleveland	5.45c to 5.65c
Detroit	5.75c
Los Angeles	6.00c
New York	5.60c
Philadelphia	5.85c
San Francisco	5.90c
Seattle	6.50c
St. Louis	5.65c
St. Paul	5.65c to 5.90c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	4.00c
New York	3.99c
Philadelphia	3.85c
Pittsburgh	3.60c
San Francisco	3.60c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.40c
Chicago	4.15c
Cleveland, 1-inch and wider No. 20 and heavier	3.85c
Cleveland, narrower than 1-inch	4.35c
Detroit	4.30c
New York	4.49c
Philadelphia, ¾-inch and wider, 20 gage and heavier	4.10c
Philadelphia—narrower than ¾-inch	4.60c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.70c

COLD FINISHED STEEL

Boston (shapes)	4.55c
Boston (rounds)	4.05c
Buffalo (rounds)	4.20c
Buffalo (shapes)	4.70c
Chicago (shapes)	4.30c
Chicago (rounds)	3.80c
Cincinnati (rounds)	4.05c
Cincinnati (shapes)	4.55c
Cleveland (rounds)	3.90c
Cleveland (shapes)	4.40c
Detroit (rounds)	4.10c
Detroit (shapes)	4.60c
Los Angeles (rounds)	4.75c
New York (rounds)	4.05c
New York (shapes)	4.55c
Philadelphia (rounds)	3.90c to 4.05c
Philadelphia (shapes)	4.40c to 4.45c
Pittsburgh (rounds)	3.80c
Pittsburgh (sq. hex. and flats)	4.30c
San Francisco (rounds)	5.25c
Seattle (rounds)	4.75c
St. Paul (rounds)	4.05c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe
(Subject to Shading)

	Black	Galvanized
⅛-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	Galvanized
⅛-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron	$5.65
Mesabi bessemer, 55 per cent iron	5.40
Old Range nonbessemer, 51½ per cent iron	4.90
Mesabi nonbessemer, 51½ per cent iron	4.75

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.50 to 10.00
Algerian low phosphorus, 52 to 54 per cent	10.50 to 11.00
Swedish and Norwegian low phosphorus, 68 per cent.	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.00 to 9.00
Algerian foundry and basic, 50 to 54 per cent	8.00 to 9.00

Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent....nominal
Indian, minimum 47 per cent....nominal
Caucasian, 53 to 55 per cent....
.....Ordinary, nominal c.i.f. tidewater
.....Washed, 39 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00 to 23.50
Washed gravel, imported duty paid eastern tidewater, per net ton	17.00 to 18.00

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for Special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke
CLEVELAND

New York **Chicago**
San Francisco
Cincinnati **Detroit**

Construction and Enterprise

(*Continued from Page* 1187)

installing a cupola in its building being remodeled. Old forge machinery has been removed and the interior arranged for foundry purposes. The forge building and machine shop are being constructed into one building.

PROVIDENCE, R. I.—E. L. Moore Co. has been incorporated with 300 shares no par value common stock, to deal in machinery and equipment, by E. L. Moore, Medford, Mass., George F. McCanna and James J. McCabe.

COLUMBIA, S. C.—Belmont Iron Works, Philadelphia, has been awarded 800 tons of structural steel for a power plant to be erected here.

DALLAS, TEX.—American Body Co., 2802 William street, is reported as seeking two motor cut-off saws, planer, jointer, band saw, drill press, etc.

HOUSTON, TEX.—M-K-T Railway Co. plans construction of a new roundhouse and yards at Eureka, a suburb, construction to begin by the first of the year. M. C. M. Hatch, M-K-T building, Dallas, Texas, is general mechanical superintendent in charge of construction.

MARSHALL, TEX.—D. R. Ware, 1504 West Grand avenue, is inquiring for equipment for a garage and machine shop.

OROVILLE, WASH.—Washington Smelter Corp. has been incorporated for $350,000 by F. A. Lewe, J. J. Aupperle, G. E. Chandler, George S. Lowry and H. H. Underhill.

RYDERWOOD, WASH.—Long-Bell Lumber Co. is constructing a machine shop for the accommodation of the Longview, Portland & Northern locomotives and for general repair work. The plant is to be 88x156 feet, and will be equipped with a 10-ton crane.

HUNTINGTON, W. VA.—Huntington Iron Works, is reported as planning to construct improvements and extensions to its plant. E. A. Reich is president. *Noted Oct.* 23.

KEWAUNEE, WIS.—F. Hamacheck Machine Co. isi nquiring for a tool room lathe and drill press. F. Hamcheck is purchasing agent.

LACROSSE, WIS.—LaCrosse Refrigerator Co. is inquiring for metal and woodworking machinery and enameling equipment for production of refrigerators. Jacob Samuels is president and manager. *Noted Oct.* 9.

MILWAUKEE—E. W. Clark Motor Co., 456 Jackson street, is inquiring for equipment for an automobile repair shop. Air compressor, tool grinder, drill press, etc., are to be bought.

MILWAUKEE—The Kieckhefer Container Co., Sixteenth street viaduct, manufacturer of paper boxes, will build a $75,000 addition to its plant and warehouse.

MILWAUKEE—The James Conroy Foundry Co. of Milwaukee has been incorporated with $36,000 capital stock by John M. Alphonse, J. and Robert Conroy, 306 Broadway.

MILWAUKEE—Architect A. J. Petelinz, 428 Grand avenue, is preparing plans for a $25,000 garage and repair shop, 50x120 feet, to be erected at National and Eighteenth avenues. The name of the owner and occupant is withheld for the present.

MILWAUKEE—The Wadhams Oil Co., 359 Clinton street, will build the fourth unit, costing $100,000, of its refinery and warehousing plant at Lapham street and Thirty-third avenue. Plans have been completed by Architect H. A. Kienapple, in care of the company, and bids will be asked after Nov. 15.

PRESCOTT, WIS.—A charter has been granted to the Prescott Co-Operative Mfg. Co., capital stock $100,000, to manufacture automobile accessories. The incorporators are William H. Stark, Sam McDonald and George F. Mecord.

RACINE, WIS.—National Machine Tool Co., 1325 Sixteenth street, has awarded contracts for constructing a 1-story, 40 x 100-foot plant.

RACINE, WIS.—The S. C. Johnson & Son Co. manufacturer of automobile waxes and finishes, varnishes and other materials, has awarded contracts for constructing building to contain industrial laboratories. Analytical, research and raw material testing divisions are planned.

WAUKESHA, WIS.—Quality Aluminum Casting Co., Lincoln avenue, is inquiring for aluminum working machinery. A. Pankratz is manager.

Business in Canada

OROVILLE, B. C.—The Washington Smelter Co., proposes to start work in the near future on the construction of a smelter on the Similkameen river, seven miles west of here.

VANCOUVER, B. C.—Hodgson, King & Marble have the contract for the construction of a machine shop and blacksmith shop, in connection with the Burrard Drydock, to cost $100,000.

ELORA, ONT.—Hercules Metals, Ltd., have been incorporated to manufacture iron, steel, metals, etc., with $50,000 capital stock; by Mary O'Sullivan, Caroline Kirvan both of Elora; Albert Tingley and others of Toronto, Ont.

CARLTON PLACE, ONT.—Findlay Bros., are asking for machinery and tools for the manufacture of patterns, etc.

GANANOQUE, ONT.—I. E. Lindsay will purchase machinery and tools for pattern and model making.

GUELPH, ONT.—Gibson Mfg. Co., is asking for a used No. 3 beading machine, also one No. 2, 16x36-inch squaring shear, cornice brake.

HAMILTON, ONT.—The Hoover Suction Sweeper Co., Canton, O., has prepared a building program for extensive improvements and additions to its plant here, for which machinery and tools will be purchased in the early future. The increased demand for the company's products both for export and home consumption is given as the reason for the additions planned.

LEAMINGTON, ONT.—The Wigle Motor Sales Co., will rebuild repair shop recently damaged by fire and will require new tools.

LONDON, ONT.—The Taylor Electric Mfg. Co., 526 Adelaide street, is in the market for a used drawing press, equal to a No. 3½ of E. W. Bliss Co., Brooklyn, N. Y.

MONKTON, ONT.—The Elma Township council proposes to build electric light and power plant here. Clerk, George Lochead, Atwood, Ont.

NIAGARA FALLS, ONT., Myer Salit, Ltd., has been incorporated to manufacture and deal in metal products, with $50,000 capital, by Arthur L. Reid, Stanley R. Reid and Lela Reid.

PETERBORO, ONT.—Central Machine Shop is asking for a thread cutting machine, drill, etc.

PETERBORO, ONT.—West End Garage Co., is asking for lathe, drill press, etc. Purchasing agent is A. T. Fontaine.

PETERBORO, ONT.—White & Ackford George street, will purchase lathe, grinder and miscellaneous tools, etc.

SAULT STE. MARIE, ONT.—J. J. Fitzpatrick has the general contract for the erection of machine shop and airdrome here to cost $100,000. Reinforcing steel contract has been let to the Sarnia Bridge Co., and other contracts will be awarded later.

TORONTO, ONT.—Hy-Lo Jacks, Ltd., has been incorporated to manufacture hydrostatic jacks and other products, by Edward L. Middleton, George Keogh and Albert E. Knox.

TORONTO, ONT.—Grinnell Co. of Canada, Ltd., 2440 Dundas street west, has awarded construction contracts for 1 and 2-story plant for galvanizing metal work and pipe.

TORONTO, ONT.—The Canadian Wire Bound Boxes, Ltd., 1000 Gerrard street east, is in the market for complete set used machinery and tools for grinding 6-inch re-saws.

TORONTO, ONT.—Bawden Machine Co., Sterling road, will rebuild plant recently damaged by fire and is interested in complete equipment for same.

TORONTO, ONT.—Wheeler & Bain, Ltd., George street, manufacturer of furnaces, galvanized roofing, etc., will build addition to plant here.

TORONTO, ONT.—The Steel Co. of Canada, Ltd., head office Hamilton, Ont., has awarded general contract to J. Robert Page, 18 Toronto street, Toronto, for addition to the company's works at Swansea, to cost $40,000.

TORONTO, ONT.—Inverness Mines, Ltd., have been incorporated to mine, smelt and refine ores, metals and minerals, with $3,000,000 capital, by Anna A. Tomlinson, Edith E. Garbutt and Ross Kennedy.

WINDSOR, ONT.—Ford Motor Co., Ltd., of Canada, through Wallace R. Campbell, vice president and treasurer, announces plans for establishing a plant in Australia, the company there to have a $5,000,000 capitalization. Five assembly and a body plant are planned.

WOODSTOCK, ONT.—Woodstock Electric Co., is asking for a 1, 1½ or 2 kilowatt, 60 cycle, 110-volt generator.

DRUMMONDVILLE, QUE.—Southern Canada Power Co., has received bids and will award contracts within the next month for about $100,000 worth of electrical equipment for its power development plant here. L. C. Haskell is secretary and treasurer of the company.

MONTREAL, QUE.—Thornycroft (Canada), Ltd., has been incorporated to manufacture and deal in conveyances and vehicles of all kinds, with $5000 capital, by Francis G. Bush, George A. Drennan and Paul Gauthier.

MONTREAL, QUE.—Concord Steel Corp., Ltd., has been incorporated to manufacture iron and steel and other metals from ore to finished products, with $525,000 capital, by Benjamin Robinson, Joseph Shapiro and Michael Garber.

MONTREAL, QUE.—Andrew S. Forman Co., 232 St. James street, is in the market for a 350-kilowatt, 550-volt, 60-cycle, 3-phase generator, direct connected to steam engine; exciter and switchboard, also four 75-horsepower slip ring motors for above mentioned current.

MONTREAL, QUE.—Stead Rail Anchor Co., Ltd., has been incorporated to manufacture rail anchors, iron, steel, metal products, railway supplies, etc., with $50,000 capital stock; by John H. Larmonth, Frank W. Cooper, both of Montreal; Richard A. Olmsted of Ottawa, Ont.

MONTREAL, QUE.—The Electric Control Co.. Ltd., has been incorporated to manufacture machinery, tools, implements, mechanical devices, etc., with $10,000 capital stock; by Francis C. E. Burnett, Montreal West; Ernest J. Brunig; Percy P. Crampton and others of Montreal.

MONTREAL, QUE.—Sticht Architectural Iron & Bronze Works, Ltd. will establish a plant here for the manufacture of grills, stairs, railings, castings, etc., and is in the market for complete equipment, tools, etc., for same. S. F. Foster, 101 Belgrave avenue, is secretary. *Noted Oct.* 16.

QUEBEC, QUE.—B. W. Moncur Co., Ltd., has been incorporated to manufacture and deal in electric, magnetic, galvanic, railway and tramway apparatus by Barnwell W. Moncur, Mary K. Moncur and John Robinson.

WABIK METAL

for

Vitreous Enameling

BROILER PANS
Splasher Backs: Stove Door Panels: Table Tops: Signs: Refrigerators: and other Flat Work

Wabik Metal Sheets, like all other Mansfield Products, are rolled from our own "Bottom-poured Ingots." They are very low in sulphur.

Other Specialties:

Body Stock; Flat Fender and Hood Stock; Cowl Stock; Radiator Casing Stock; Crown Fender Stock.

METAL FURNITURE SHEETS
PICKELED and ANNEALED
ENAMELING STOCK
for Kitchen Utensils
MILK CAN STOCK

"Mansfield" Steel is the ultimate in Sheet Bars and in Sheets. It means satisfaction to all of the many users. Constant study of the needs of users, and continuous application of the results of such study, in the way of improved methods in our plants has established a reputation for unsurpassed reliability.

We invite your inquiries.

SHEET BARS and INGOTS

MANSFIELD SHEET & TIN PLATE COMPANY

MANSFIELD, OHIO

DISTRICT SALES REPRESENTATIVES

The L. D. Rockwell Co., 1106 National City Bldg., New York, N. Y.
Mansfield Sheet & Tin Plate Co., 1372 Wrigley Bldg., Chicago, Ill.
Mansfield Sheet & Tin Plate Co., 12-237 General Motors Bldg., Detroit, Mich.
The L. D. Rockwell Co., 2002 Union Trust Bldg., Cleveland, O.
Wm. L. Hoffman, 1504 West Venango St., Philadelphia, Pa.
Mr. C. H. Beach, 617 Merchants Bank Bldg., Indianapolis, Ind.
Mr. A. P. Grenier, 640 Endicott Bldg., St. Paul, Minn.
Wm. P. Horn Co., 237 Rialto Bldg., San Francisco, Cal.
Wm. P. Horn Co., 301 Kerchoff Bldg., Los Angeles, Cal.
Wm. P. Horn Co., Dekum Building, Portland, Ore.
Wm. P. Horn Co., 1426 L. C. Smith Bldg., Seattle, Wash.

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	12.00 to 12.50
Boston (dealers)	12.00 to 12.50
Buffalo	16.50 to 17.00
Chicago	16.50 to 17.00
Cleveland	15.25 to 15.50
Cincinnati (dealers)	13.00 to 13.50
Detroit (dealers)	14.00 to 14.50
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	12.50 to 13.00
Pittsburgh	18.50 to 19.00
St. Louis	14.50 to 15.00
Valleys	17.25 to 17.50
No. 1 railroad steel New York (dealers)	13.00 to 13.50

COMPRESSED SHEETS

Buffalo	15.50 to 16.50
Chicago	13.00 to 13.50
Cleveland	13.25 to 13.50
Detroit (dealers)	11.50 to 12.00
Pittsburgh	16.50 to 17.00
Valleys	15.25 to 15.75

BUNDLED SHEETS

Buffalo	13.50 to 14.00
Cincinnati (dealers)	9.50 to 10.00
Cleveland	12.25 to 12.50
Detroit	10.00 to 10.50
Eastern Pennsylvania	13.50 to 14.50
Pittsburgh	15.50 to 16.00
St. Louis	8.50 to 9.00
Valleys	13.75 to 14.00

SHEET CLIPPINGS, LOOSE

Chicago	9.25 to 9.75
Detroit	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	12.50 to 13.00
Detroit, No. 2	14.00 to 14.50
Chicago	18.25 to 18.75
Cincinnati (dealers)	14.00 to 14.50
Cleveland (over 6 ft.)	14.75 to 15.00
St. Louis	17.00 to 17.50

STOVE PLATE

Birmingham	13.50 to 14.00
Boston (consumers)	14.50 to 15.00
Buffalo	15.50 to 16.00
Chicago	16.50 to 17.00
Cincinnati (dealers)	9.50 to 10.00
Cleveland	13.25 to 13.50
Detroit (net tons) dealers	13.50 to 14.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	12.00 to 12.50
Pittsburgh	14.50 to 15.00
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo	19.00 to 19.50
Cincinnati (dealers)	15.00 to 15.50
Eastern Pennsylvania	19.50 to 20.50
Pitts. billet and bloom crops	22.50 to 23.50

SHOVELING STEEL

Chicago	16.25 to 16.75
Pittsburgh	14.00 to 14.50
St. Louis	14.50 to 15.00

KNUCKLES, COUPLERS, SPRINGS

Chicago	18.50 to 19.00
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	20.00 to 20.50
St. Louis	17.75 to 18.25

FROGS, SWITCHES, GUARDS

Chicago	16.75 to 17.25
Eastern Pennsylvania	16.50 to 17.00
St. Louis	15.50 to 16.00

BOILER PLATE, CUT

St. Louis	9.00 to 9.50

ANGLE BARS—STEEL

Chicago	17.50 to 18.00
St. Louis	16.00 to 16.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$12.00 to 13.00
Boston (dealers)	13.50 to 14.00
Buffalo	15.00 to 15.50
Cleveland, No. 1	12.75 to 13.00
Chicago, No. 1	15.75 to 16.25
Chicago, No. 2	16.50 to 17.00
Cincinnati, No. 1 (dealers)	11.00 to 11.50
Detroit, No. 2	14.00 to 14.50
Eastern Pennsylvania	18.50 to 19.00
New York, No. 1 (dealers)	15.00 to 15.50
Pittsburgh, No. 1	15.00 to 15.50
Pittsburgh, No. 2	18.50 to 19.00
St. Louis, No. 1	13.00 to 13.50
St. Louis, No. 2	14.50 to 15.00

WROUGHT PIPE

Boston (dealers)	11.50 to 12.00
Buffalo	11.00 to 12.00
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	11.75 to 12.25

YARD WROUGHT

Boston	12.50 to 13.00
Eastern Pennsylvania	17.00 to 18.00

CITY WROUGHT

New York, long	13.50 to 14.00

BUSHELING

Buffalo	14.00 to 14.50
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	9.50 to 10.00
Cincinnati, No. 1 (dealers	9.50 to 10.00
Cleveland, No. 1	13.50 to 13.75
Cleveland, No. 2	12.00 to 12.25
Detroit, No. 1	11.50 to 12.00
Detroit, No. 2 (new)	11.00 to11.50
Detroit, No. 2 (old)	10.50 to 11.00
Eastern Pennsylvania	14.00 to 14.50
Pittsburgh, No. 1	14.00 to 14.50
St. Louis, No. 1	13.00 to 13.50

MACHINE SHOP TURNINGS

Birmingham	6.00 to 7.00
Boston (dealers)	8.50 to 9.00
Buffalo	12.00 to 12.50
Chicago	9.00 to 9.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	13.50 to 13.75
Detroit (dealers)	10.00 to 10.50
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	9.50 to 10.00
Pittsburgh	14.00 to 14.50
St. Louis	7.00 to 7.50
Valleys	12.00 to 12.25

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	7.00 to 8.00
Boston (chemical)	11.50 to 12.00
Boston (dealers)	8.50 to 9.00
Buffalo	12.50 to 13.00
Chicago	12.00 to 12.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	13.50 to 13.75
Detroit (dealers)	10.50 to 11.00
Eastern Pennsylvania (chem.)	16.50 to 17.00
Eastern Pennsylvania	14.00
New York (dealers)	9.75 to 10.25
Pittsburgh	15.00 to 15.50
St. Louis	10.50 to 11.00
Valleys	13.50 to 13.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.50 to 9.00
Detroit (dealers)	10.50 to 11.00
Eastern Pennsylvania	12.50 to 13.50
New York (dealers)	9.25 to 9.75

IRON AXLES

Birmingham	19.00 to 19.50
Boston (consumers)	31.00 to 32.00
Buffalo	25.00
Chicago	27.50 to 28.00
Cincinnati (dealers)	20.50 to 21.00
St. Louis	26.00 to 26.50
Eastern Pennsylvania	29.00 to 31.00

IRON RAILS

Buffalo	18.00 to 18.50
Chicago	18.25 to 18.75
Cincinnati (dealers)	11.50 to 12.00
St. Louis	15.00 to 15.50

PIPES AND FLUES

Chicago	12.00 to 12.50
Cincinnati (dealers)	7.50 to 8.00
Cleveland	11.25 to 11.50
St. Louis	11.00 to 11.50

RAILROAD GRATE BARS

Buffalo	14.50 to 15.00
Chicago	16.00 to 16.50
Cleveland	13.25 to 13.50
Eastern Pennsylvania	15.00 to 16.00
New York (dealers)	13.00 to 13.50
St. Louis	14.50 to 15.00

FORGE FLASHINGS

Boston (dealers)	9.50 to 10.00
Buffalo	13.00 to 13.50
Chicago	11.50 to 12.00
Cleveland (under 10 in.)	12.75 to 13.00
Cleveland (over 10 in.)	11.50 to 11.75
Detroit (dealers)	10.50 to 11.00

FORGE SCRAP

Boston (dealers)	9.00 to 9.50
Chicago	18.50 to 19.00
Eastern Pennsylvania	14.00 to 14.50

ARCH BARS AND TRANSOMS

Chicago	20.75 to 21.25
St. Louis	20.00 to 20.50

ANGLE BARS—IRON

Chicago	19.50 to 20.00
St. Louis	17.50 to 18.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	8.50 to 9.00
Buffalo	14.50 to 15.00
Chicago	14.00 to 14.50
Cleveland	14.00 to 14.25
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh	16.50 to 17.50
St. Louis	12.00 to 12.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston (consumers)	21.00 to 22.00
Buffalo	19.00 to 20.00
Chicago	19.25 to 19.75
Cleveland	17.25 to 17.50
Eastern Pennsylvania	23.00 to 24.00
Pittsburgh	21.50 to 22.00
St. Louis	19.50 to 20.00

SHAFTING

Boston (consumers)	21.00 to 22.00
Chicago	21.00 to 21.50
Eastern Pennsylvania	23.00 to 25.00
New York (dealers)	18.50 to 19.50
St. Louis	19.50 to 20.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	14.00 to 16.00
Birmingham, iron	14.00 to 15.00
Boston (consumers)	17.00 to 17.50
Buffalo	16.50 to 17.00
Chicago, iron	18.00 to 18.50
Chicago, steel	19.00 to 19.50
Cincinnati	11.50 to 12.00
Eastern Pennsylvania	17.50 to 18.00
New York iron (dealers)	14.75 to 15.25
Pittsburgh, iron	18.50 to 19.00
Pittsburgh, steel	20.00 to 20.50
St. Louis, iron	16.50 to 17.00
St. Louis steel	18.00 to 18.50

NO. 1 CAST SCRAP

Birmingham, cupola	14.00 to 15.00
Boston (consumers)	19.00 to 19.50
Buffalo	17.00 to 17.50
Chicago, No. 1 machinery	19.00 to 19.50
Chicago No. 1 railroad or agricultural	18.00 to 18.50
Cincinnati No. 1 machinery cupola (net tons dealers)	17.50 to 18.00
Cleveland, cupola	18.00 to 18.25
Detroit (net tons) (dealers)	15.50 to 16.00
Eastern Pennsylvania, cupola	17.50 to 18.00
New York, cupola (dealers)	14.75 to 15.25
Pittsburgh, cupola	17.50 to 18.00
San Francisco	20.00
Seattle	20.00
St. Louis	18.50 to 19.00
St. Louis, agricultural	18.50 to 19.00
Valleys	18.50 to 19.00

HEAVY CAST

Boston (consumers)	16.00 to 17.00
Buffalo (breakable)	16.00 to 16.50
Cleveland	12.00 to 12.25
Detroit (automobile) (net ton)	15.50 to 16.00
Eastern Pennsylvania	16.50
New York (dealers)	13.50 to 14.00
Pittsburgh	16.00 to 16.50

MALLEABLE

Boston (railroad)	17.25 to 17.75
Buffalo	17.50 to 18.00
Chicago, railroad	18.25 to 18.75
Chicago, agricultural	16.50 to 17.00
Cincinnati, agricultural (dealers)	14.50 to 15.00
Cincinnati, railroad (dealers)	14.00 to 14.50
Cleveland, agricultural	16.75 to 17.00
Cleveland, railroad	18.00 to 18.25
Detroit (dealers)	15.50 to 16.00
Eastern Pennsylvania, railroad	15.50 to 16.50
Pittsburgh, railroad	16.50 to 17.00
St. Louis, agricultural	14.50 to 15.00
St. Louis, railroad	15.00 to 15.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

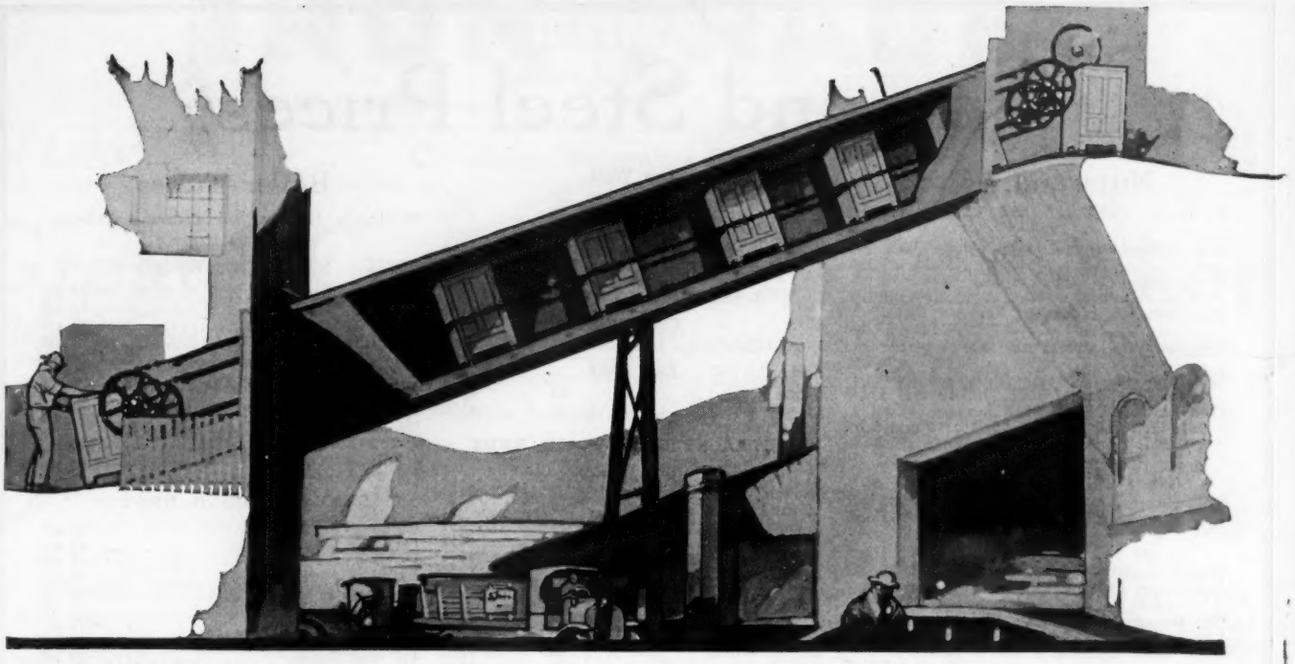
Birmingham tram car	15.50 to 16.00
Boston (dealers)	13.00 to 13.50
Chicago	17.50 to 18.00
Cleveland	15.75 to 16.25
Detroit	13.50 to 14.00
Eastern Pennsylvania	18.50
New York (dealers)	15.50 to 16.00
Pittsburgh district	19.00 to 19.50
St. Louis	17.00 to 17.50

LOCOMOTIVE TIRES

Chicago	18.50 to 19.00
St. Louis	16.50 to 17.00

LOW PHOSPHORUS PUNCHINGS

Chicago	17.50 to 18.00
Eastern Pennsylvania	18.50 to 19.00
Pittsburgh	20.00 to 20.50



Brownhoist installed this double strand cross bar conveyor for the Odorless Refrigerator Division of the Tennessee Furniture Corporation.

The equipment saves the work of three men. It also releases its crew of one man for other work during slack periods of the day.

Small Conveyors Save Big Sums for Industrial Plants

In almost every plant there are small handling or trucking jobs which add to production costs through wasted manpower and time.

These jobs can be simplified—the waste can be eliminated—the cost can be cut. Brownhoist conveyors are doing exactly this work in scores of plants—large and small.

Brownhoist engineers develop equipment to meet each of these problems individually—and at a cost commensurate with the saving to be effected. Their wide experience will be helpful to you. Their advice is yours for the asking.

Brownhoist Products

Heavy Dock Machinery
Locomotive Cranes
Monorail Trolleys
Concrete Bunkers
Chain Conveyors
Belt Conveyors
Bridge Cranes
Coal Crushers
Buckets, etc.

The Brown Hoisting Machinery Co., *Cleveland, O.*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans, London, Eng.

BROWNHOIST

MATERIAL HANDLING EQUIPMENT

Iron and Steel Prices

Nuts and Bolts

F. o. b. Pittsburgh and Chicago district mills

Hot pressed square tapped or blank ....$4.50 off list
Hot pressed hexagon tapped or blank ....5.00 off list
Cold punched square or hexagon blank ....4.50 off list
Cold punched square or hexagon tapped ....4.50 off list
Cold punched semifinished hexagon nuts ½-inch and larger ..75, 10, 10 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller..80, 10, 10 and 5 off
Price f.o.b. Pittsburgh, packages of 50.

CARRIAGE BOLTS
(⅜ x 6", smaller and shorter)

Rolled thread ....60 and 10 off
Cut thread (all sizes) ....60 off

MACHINE BOLTS
(⅜ x 4", hot pressed nuts)

Rolled thread ....60 and 20 off
Cut thread (all sizes) ....60 and 10 off
(All sizes cold punched nuts)
Cut thread ....50, 10 and 5 off
Lag screws ....70 off
Plow bolts Nos. 1, 2 and 3 heads.. ....50 and 10 off
4 to 10 heads ....50-10 + 20 off
Flat and round head stove bolts ....80, 10 and 5 off
Other stove bolts ....80, 10 and 10 off
Tap bolts ....30 off
Bolt ends with hot pressed nuts ....60 and 10 off
Bolt ends with cold punched nuts ....50 and 10 off
Blank bolts ....65 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size) ....50 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, Pittsburgh and Chicago

	S. A. E. Castellated	U. S. S. Slotted
¼	$ 4.25	$ 4.25
5/16	4.90	4.90
⅜	5.90	6.25
7/16	7.50	8.50
½	9.75	10.00
9/16	13.25	13.50
⅝	16.25	16.50
¾	22.50	23.00
⅞	34.00	34.00
1	53.00	55.00
1⅛	85.00	85.00
1¼	120.00	125.00
1⅜	170.00	170.00
1½	200.00	200.00

Larger sizes—Prices on application.

Rivets

Structural rivets, carloads Pittsburgh 2.60c
Structural rivets, carloads, Chicago 2.75c
Rivets, 7/16-in. and smaller .... 70, 10 and 5 off

Washers

Wrought, c. l., Chicago dist. $5.75 to $6.15 off
Wrought, c. l., Pitts. dist.....$6.00 off
Lock washers f.o.b. factory .....80 off

Steel Pipe

Pittsburgh and Lorain basing discounts, jobbers' carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Beld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

THREADS AND COUPLINGS

Butt Weld

¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld

¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
½-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

SEAMLESS COLD DRAWN*

1-inch	51 off
1¼ and 1½-inch	43 off
1¾-inch	27 off
2 and 2¼-inch	18 off
2½ and 2¾-inch	28 off
3 and 3¼-inch	32 off
3½ and 3¾-inch	33 off
4-inch	37 off
4½ and 5-inch	29 off

SEAMLESS HOT HOLLED*

3 and 3¼-inch	34 off
3½ and 3¾-inch	35 off
4-inch	39 off

SEAMLESS STEEL MERCHANT BOILER TUBES*

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING*

Base Discounts

Carbon, 0.10 to 0.20 per cent ..... 83 off
Carbon, 0.30 to 0.40 per cent .... 81 off
Carbon, 0.40 to 0.50 per cent ....net price
Plus differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES*

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	15c
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5½-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

*Published discounts are subject to considerable shading, in some cases as much as three to five extra 5 per cents.

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago .....$53.20 to 54.20
Six-inch and over, Chicago .. 49.20 to 50.20
Four-inch, Birmingham ..... 48.00 to 49.00
Six-inchand over Birmingham 44.00 to 45.00
Four-inch, New York ..... 64.50 to 65.60
Six-inch and over, New York 59.50 to 60.60
Standard fittings, Birmingham, base..$110.00
6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.
Class A pipe is $5 higher than Class B.